Compact disc recorder

CDR779

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Service
Service
Service

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Service Manual

SERVICING

For servicing CDR779, the set can be devided into three parts

1. The display board (partly) 1002, the I/O board 1004, the headphone board (partly) 1002, the IR board (partly) 1002, the ON/OFF & Standby LED board (partly) 1002 and the CD-out board (partly) 1002 have to be repaired at component level. The power supply unit 1003 is available as spare part, but can also be repaired at component level.
2. The CDR module (containing the CDR loader 81, CDR main board 1001 and loader bracket 82, 83) can also be repaired at component level with the help of COMPAIR release 1.6 and higher. With this tool the diagnosing of the set can be done in an interactive way. In the tool also the adjustment procedure has been implemented. This is absolutely necessary in case the CDR mainboard and/or (CDR loader) CDM is disconnected from the matched production combination. Only designated workshops can perform these repairs. Please send the complete set to the designated workshop.
3. The CD module (containing the CD loader 131, CD mainboard 1005 and loader bracket 132) is a new module with VAL1250 loader assy but also a separate CDM and separate loader parts will be available via service stock. The CD mainboard can be repaired at component level.

Also available : Circuit Description “The Basics of Compact Disc Recordable/Rewriteable”. Service codenumber 4822 725 25242. Second line Repairmanual . Service codenumber 3104 125 40110.

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PHILIPS

1. Technical Specifications CDR779

1.1 General

Mains voltage	:	all range version 84-230V
Mains frequency	:	50-60 Hz
Power consumption	:	12W
DC output	:	+5V ± 10%, 50mA max.

1.2 Input/output

1.2.1 Line output (CDR & CD)

Output level	:	2Vrms at 0dB
Output resistance	:	200Ω

1.2.2 Line input

Input sensitivity	:	500mVrms
Input impedance	:	50kΩ
Max. input voltage	:	2.5Vrms

1.2.3 Digital output (CDR & CD)

Format	:	AES/EBU format according IEC958 (consumer format)
Sampling frequency	:	44.1kHz
Output resistance	:	75Ω

1.2.4 Digital input

Format	:	AES/EBU format according IEC958 (consumer format)
Sampling frequency	:	32 to 48kHz
Input resistance	:	75Ω

1.2.5 Optical input

Format	:	AES/EBU format according IEC958 (consumer format)
Sampling frequency	:	32 to 48kHz

1.3 Audio performance

1.3.1 Cinch analog output (CDR play-back)

Output voltage	:	2Vrms ± 2dB. (0dB digital).
Frequency range F.R.	:	20Hz < F.R. < 20kHz.
Amplitude linearity	:	± 0.15dB.
	:	typical.: ± 0.1dB.
Channel unbalance	:	<0.3dB at 1kHz.
	:	typical: ± 0.2dB.
Phase non-linearity	:	<0.2deg at 1kHz.
Outband attenuation	:	50dB above 30kHz.
Channel separation	:	>100dB at 1kHz.
	:	typical: 110dB.
	:	>84dB from 20Hz. until 20kHz.
	:	typical: >85dB.
S/N-ratio A-weighted	:	>99dB.
	:	typical: 100dB.
S/N-ratio unweightes	:	>97dB.
	:	typical: 98dB.
Dynamic range	:	> 94dB. at 1kHz.
	:	typical: 95dB.
THD+N	:	> 89dB from 20Hz. until 20kHz.
	:	typical: 90dB.

1.3.2 Cinch analog input/output (monitor path CDR)

Measued with Audio precision system one.Input voltage is 2Vrms.

input voltage	:	2Vrms ± 2dB. (0dB digital).
Frequency range F.R.	:	20Hz < F.R. < 20kHz.
Amplitude linearity	:	± 0.2dB.
	:	typical.: ± 0.1dB.
Channel unbalance	:	< 0.2dB at 1kHz.
	:	typical: ± 0.15dB.
Input resistance	:	25k(
Phase non-linearity	:	< 0.2deg at 1kHz.
Outband attenuation	:	50dB above 30kHz.
Channel separation	:	> 90dB at 1kHz.
	:	typical: 100dB.
S/N-ratio A-weighted	:	> 87dB.
	:	typical: 93dB.
S/N-ratio unweighted	:	> 87dB.
	:	typical: 90dB.
Dynamic range	:	> 86dB. at 1kHz.
	:	typical: 90dB.
	:	> 86dB from 20Hz. until 20kHz.
	:	typical: 90dB.
THD+N	:	> 86dB from 20Hz. until 20kHz.
	:	typical: 87dB.

1.3.3 Cinch analog output (CD play-back)

Output voltage	:	2Vrms ± 2dB. (0dB digital).
Frequency range F.R.	:	20Hz < F.R. < 20kHz.
Amplitude linearity	:	± 0.3dB.
	:	typical.: ± 0.1dB.
Channel unbalance	:	<0.3dB at 1kHz.
	:	typical: ± 0.2dB.
Output resistance	:	200(.
Phase non-linearity	:	<0.2deg at 1kHz.
Outband attenuation	:	60dB above 30kHz.
Channel separation	:	>95dB at 1kHz.
	:	typical: 100dB.
	:	>90dB from 20Hz. until 20kHz.
	:	typical: >93dB.
S/N-ratio A-weighted	:	>98dB.
	:	typical: 100dB.
S/N-ratio unweighted	:	>92dB.
	:	typical: 95dB.
Dynamic range	:	>92dB. at 1kHz.
	:	typical: 96dB.
	:	>90dB from 20Hz. until 20kHz.
	:	typical: 96dB.
THD+N	:	>82dB from 20Hz. until 20kHz.
	:	typical: 85dB.

1.3.4 Headphone output (all functions)

Output voltage	:	2Vrms (0dB)/16Ω
S/N	:	> 80dB
THD+N	:	> 78dB
Channel separation	:	> 60dB between 20Hz until 20kHz

1.4 Laser device

Material	:	GaAlAs
Wave length	:	between 780 and 800nm (at 25°C)
Laser output	:	1mW max. during reading, 20mW max. during writing
Class	:	3B

1.5 Dimensions and weight

Number and height of feet	:	4x11mm foiled
Apparatus tray closed (WxDxH)	:	435x305x75mm (without feet)
Weight without packaging	:	3.2kg
Weight with packaging	:	4.2kg

2. Warnings and Servicing Hints

(GB) WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD).
Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.
Keep components and tools also at this potential.

ESD

(NL) WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor elektrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(F) ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise a leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller a ce que les composants ainsi que les outils que l'on utilise soient également a ce potentiel.

(D) WARNUNG

Alle IC und viele andere Halbleiter sind empfindlich gegen elektrostatische Entladungen (ESD).
Unsorgfältige Behandlung bei der Reparatur kann die Lebensdauer drastisch vermindern.
Sorgen sie dafür, das Sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind.
Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

(I) AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevita potrebbe essere fortemente ridatta in caso di non osservazione della piu grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

(GB)

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

(NL)

Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt terug gebracht en dat onderdelen, identiek aan de gespecifieerde worden toegepast.

(D)

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten.
Der Originalzustand des Gerats darf nicht verandert werden.
Fur Reparaturen sind Original-Ersatzteile zu verwenden.

(I)

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati pezzi di ricambiago idetici a quelli specificati.

(F)

Les normes de sécurité exigent que l'appareil soit remis a l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

CAUTION INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
VARO! AVATTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASER SÄTEILYLLE ÄLÄ KATSO SÄTEESEEN.
VARNING OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD BETRAKTA EJ STRÅLEN.
ADVERSEL USYNLIG LASERSTRÅLING VED ÅBNING. UNDGÅ UNSAETTELSE FOR STRÅLING.
DANGER INVISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM.
VORSICHT UNSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN.

SHOCK, FIRE HAZARD SERVICE TEST:

CAUTION: After servicing this appliance and prior to returning to customer, measure the resistance between either primary AC cord connector pins (with unit NOT connected to AC mains and its Power switch ON), and the face or Front Panel of product and controls and chassis bottom,
Any resistance measurement less than 1 Megohms should cause unit to be repaired or corrected before AC power is applied, and verified before return to user/customer.
Ref.UL Standard NO.1492.

NOTE ON SAFETY:

Symbol ⚠ : Fire or electrical shock hazard. Only original parts should be used to replace any part with symbol ⚠
Any other component substitution(other than original type), may increase risk or fire or electrical shock hazard.

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agrées, seuls habilités à réparer votre appareil en panne."

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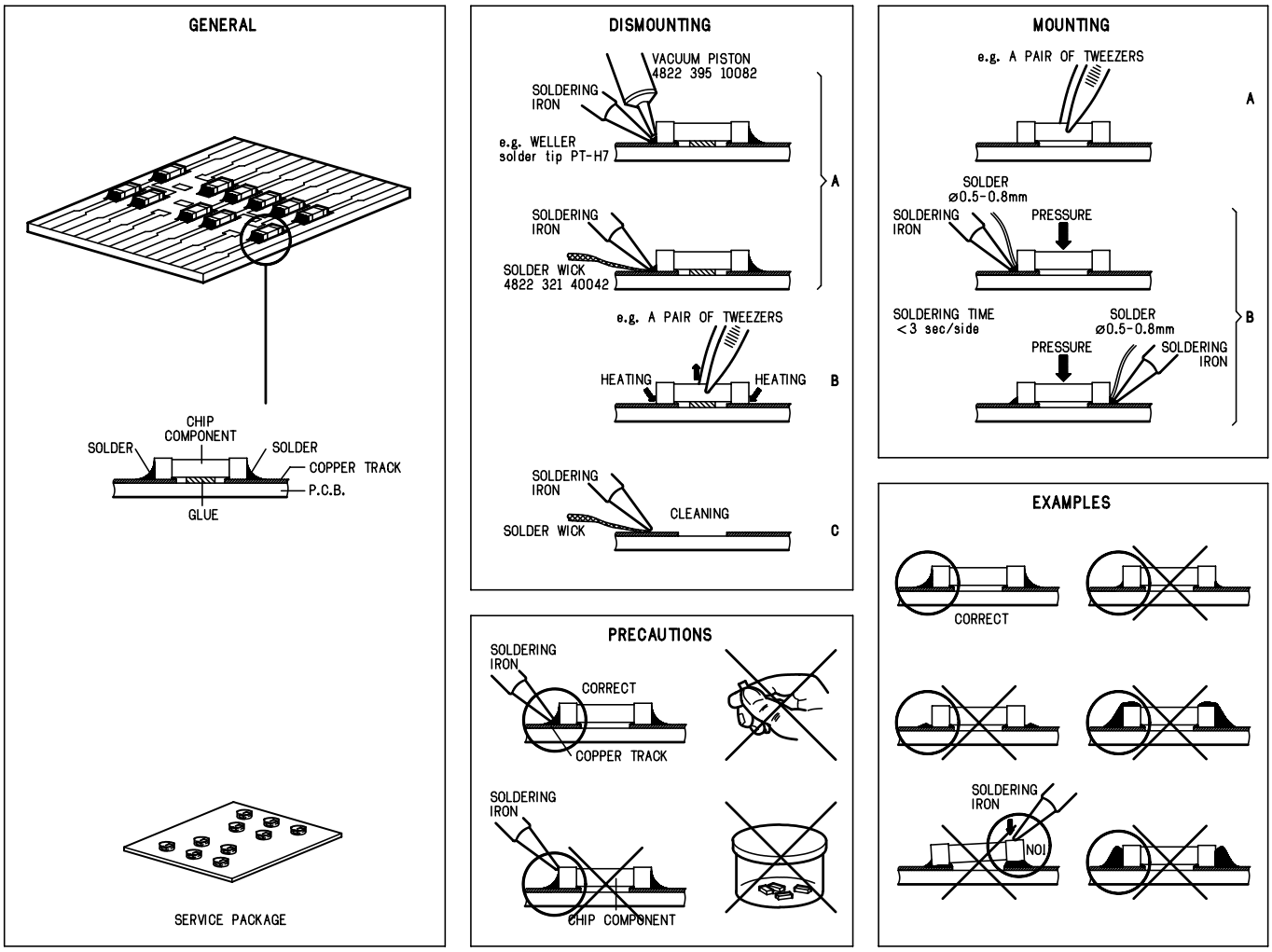
SERVICING HINTS

In the set, chip components have been applied. For disassembly and assembly check the figure below.



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SAFETY GUIDELINES FOR THE PROFESSIONAL SERVICE TECHNICIAN

Important

Proper service and repair is important to the safe, reliable operation of all Philips equipment. The service procedures recommended by Philips and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Philips could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Philips has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Philips must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

Safety Checks

After the original service problem has been corrected, a complete safety check should be made. Be sure to check over the entire set, not just the areas where you have worked. Some previous servicer may have left an unsafe condition, which could be unknowingly passed on to your customer. Be sure to check all of the following:

Fire and Shock Hazard

1. Be sure all components are positioned in such a way as to avoid the possibility of adjacent component shorts. This is especially important on those units which are transported to and from the service shop.
2. Never release a repaired unit unless all protective devices such as insulators, barriers, covers, strain reliefs, and other hardware have been installed according to the original design.
3. Soldering and wiring must be inspected to locate possible cold solder joints, solder splashes, sharp solder points, frayed leads, pinched leads, or damaged insulation (including the ac cord). Be certain to remove loose solder balls and all other loose foreign particles.
4. Check across-the-line components and other components for physical evidence of damage or deterioration and replace if necessary. Follow original layout, lead length, and dress.
5. No lead or component should touch a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces or edges must be avoided.
6. Critical components having special safety characteristics are identified with a ⚠ by the Ref. No. in the parts list and enclosed within a broken line* (where several critical components are grouped in one area) along with the safety symbol ⚠ on the schematic diagrams and/or exploded views.

   Replacement parts without the same safety characteristics may create shock, fire, or other hazards.
7. When servicing any unit, always use a separate isolation transformer for the chassis. Failure to use a separate isolation transformer may expose you to possible shock hazard, and may cause damage to servicing instruments.
8. Many electronic products use a polarized ac line cord (one wide pin on the plug). Defeating this safety feature may create a potential hazard to the servicer and the user. Extension cords which do not incorporate the polarizing feature should never be used.

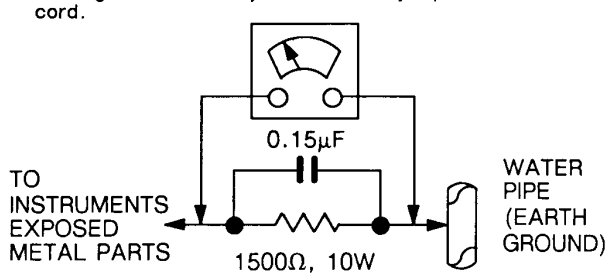
Fire and Shock Hazard (Continued)

9. After reassembly of the unit, always perform an ac leakage test or resistance test from the line cord to all exposed metal parts of the cabinet. Also, check all metal control shafts (with knobs removed), antenna terminals, handles, screws, etc. to be sure the unit is safe to operate without danger of electrical shock.

* Broken line: ▬ ▪ ▬ ▪ ▬ ▪ ▬ ▪ ▬ ▪

Leakage Current Cold Check

1. Unplug the ac line cord and connect a jumper between the two prongs of the plug.
2. Turn on the power switch.
3. Measure the resistance value between the jumpered ac plug and all exposed cabinet parts of the receiver, such as screw heads, antennas, and control shafts. When the exposed metallic part has a return path to the chassis, the reading should be between 1 megohm and 5.2 megohms. When the exposed metal does not have a return path to the chassis, the reading must be infinity. Remove the jumper from the ac line cord.



Leakage Current Hot Check

1. Do not use an isolation transformer for this test. Plug the completely reassembled unit directly into the ac outlet.
2. Connect a 1.5k, 10W resistor paralleled by a 0.15uF. capacitor between each exposed metallic cabinet part and a good earth ground such as a water pipe, as shown above.
3. Use an ac voltmeter with at least 5000 ohms/volt sensitivity to measure the potential across the resistor.
4. The potential at any point should not exceed 0.75 volts. A leakage current tester may be used to make this test; leakage current must not exceed 0.5 milliamps. If a measurement is outside of the specified limits, there is a possibility of shock hazard. The receiver should be repaired and rechecked before returning it to the customer.
5. Repeat the above procedure with the ac plug reversed. (Note: An ac adapter is necessary when a polarized plug is used. Do not defeat the polarizing feature of the plug.)

Parts Replacement

1. Many electrical and mechanical parts in Philips equipment have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. The use of a substitute part which does not have the same safety characteristics as the Philips recommended replacement part shown in this service manual may create shock, fire, or other hazards. Under no circumstances should the original design be modified or altered without written permission from Philips. Philips assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.
2. All ICs and many other semiconductor parts are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce the life of the part drastically.

LASER NOTE:

DANGER - Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.
CAUTION - Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
CAUTION - The use of optical instruments with this product will increase eye hazard.

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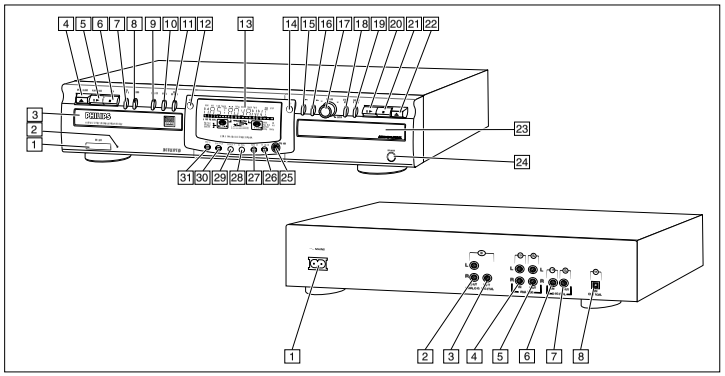
CONTROLS AND CONNECTIONS



Controls on the front

CD recorder

1 **ON/OFF**.....turns the CD recorder ON or OFF (if the recorder is in Standby mode, any key press will activate the CD recorder)
2 Standby indicator
3 Disc tray
4 **OPEN/CLOSE ▲**.....opens/closes disc tray
5 **PLAY/PAUSE ► II**.....starts play/interrupts play or recording
6 **STOP ■**.....stops/clears a program
7 **REC**(ord) **TYPE**.....selects recording modes
8 **RECORD**.....starts recording, finalizing, erasing
9 **FINALIZE**.....selects finalize mode
10 **ERASE**.....selects erasing mode (disc or track)
11 **EXT SOURCE**.....selects external input source
12 **CDR**.....selects CD recorder deck display/keys

CD player

14 **CD**.....selects CD player deck display/keys
20 **PLAY/PAUSE ► II**.....starts play/interrupts play
21 **STOP ■**.....stops/clears a program
22 **OPEN/CLOSE ▲**.....opens/closes disc tray
23 Disc tray

General

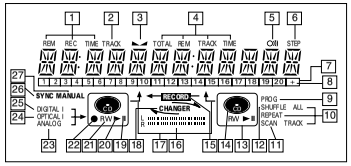
13 Display.....information screen
15 **◄◄**.....- searches backward
- cursor control in Menu/Prog. review mode
16 **►►**.....- searches forward
- cursor control in Menu/Prog. review mode
17 **I◄ EASY JOG ►I** (rotate).....- previous/next track (Play and Program mode)
- recording level control (recording)
- selects settings (menu on)
ENTER (push).....- plays selected tracks
- selects settings in Menu mode
- programs track numbers
18 **STORE/MENU**.....- stores Menu settings
- enters Menu mode
19 **CANCEL/DELETE**.....- deletes tracks from a program
- deletes text in Menu mode
- returns to a higher level in the menu
24 **IR sensor**.....receives signals from the remote control
25 **PHONES**.....socket for headphones
26 **DJ MODE**.....separate play of CD recorder deck and CD player deck
27 **REPEAT**.....repeats play (All, program or track)
28 **SCROLL**.....activates scrolling of text over the display (once)
29 **DISPLAY**.....selects display information, permanent text scrolling and time
30 **SHUFFLE**.....plays CD(RW) or program in random order
31 **PROG**(ram).....opens/closes program memory

Note: Unless stated otherwise, all controls are on the front of the CD recorder. When provided on the remote control, you can also use the corresponding buttons, after selecting the CD recorder deck or CD player deck by pressing CDR or CD.

Connections at the back

1 Connection to mains
2 **ANALOG OUT**.....connects CD player deck to the line input of an amplifier (left and right)
3 **DIGITAL OUT CD**.....connects CD player deck to the digital coaxial input of e.g. amplifier or recording device
4 **ANALOG IN**.....connects to the line output of an amplifier (left and right)
5 **ANALOG OUT CDR & CD**.....connects to the line input of an amplifier (left and right)
6 **DIGITAL IN**.....connects to the digital coaxial output of an external CD player
7 **DIGITAL OUT CDR & CD**.....connects to the digital coaxial input of e.g. amplifier or recording device
8 **OPTICAL IN**.....connects to the digital optical output of an external CD player

DISPLAY indications


1 2 3 4 5 6
REM REC TIME TRACK TOTAL REM TRACK TIME STEP
7 8 9 10
27 26 25 24
SYNC MANUAL
DIGITAL I OPTICAL I ANALOG
RECORD
CHANGER
PROG SHUFFLE ALL REPEAT SCAN TRACK
23 22 21 20 19 18 17 16 15 14 13 12 11

1 **REM/REC TIME**.....remaining time/remaining recording time/recording time
2 **TRACK**.....track number
3 ◣◢.....balance (lights during balance adjustment)
4 **TOTAL REM TRACK TIME**.....total or remaining time of disc or track
5 .....remote control active
6 **STEP**.....indicates the number of tracks in a program
7 **Track bar**.....indicates:
- tracks on a disc or in a program
- track in play
8 **+ 20**.....disc or program contains more than 20 tracks
9 **PROG**(ram).....flashes during programming/lights in program mode
10 **REPEAT TRACK/ALL**.....lights up when a track/ complete disc (or program) is repeated
11 **SCAN**.....lights up when the first 10 seconds of each track are played
12 **SHUFFLE**.....plays tracks in random order
13 ■.....CD player deck selected
14 ●.....CD inserted (a pre-recorded CD or finalized CDR or CDRW disc)
15 **– RECORD –**.....lights during recording from the internal CD
16 **L/R II II**.....record/play level bar. Indicates the audio signal level
17 ┘ └.....DJ mode selected
18 **CHANGER**.....changer mode selected
19 **II**.....pause function active
20 ►.....lights during play
21 **R(W)**.....unfinalized CDR(W) disc inserted
22 ●.....lights during recording
23 **ANALOG**.....- analog input selected for external recording
- analog recording
24 **OPTICAL I**.....optical input I selected for external recording
25 **DIGITAL I**.....digital input I selected for external recording
26 **SYNC**.....automatic or synchronised start of external recording
27 **MANUAL**.....manual operation of external recording

English

DISPLAY messages

Messages, as listed and explained here, may appear on the display for your guidance.

General

READING ..... reading disc information
OPEN ..... during tray opening
CLOSE ..... during tray closing
NO DISC ..... no disc inserted, disc unreadable or disc inserted upside down
PROG FULL ..... program full
INSERT DISC ..... insert disc or insert disc in correct way
WRONG DISC/ USE AUDIO CD ..... inserted disc is not an audio CD
UNFINALIZED ..... unfinalized CDR(W) disc
MEMORY xx% ..... indicates the amount of text memory used for unfinalized discs

Recording

WAIT ..... - when STOP ■ is pressed during recording
- when STOP ■ is pressed during recording the first 4 seconds of a track

UPDATE ..... updating disc contents
DISC FULL ..... no more recording possible
DIGITAL 1 ..... digital coaxial input 1 selected
OPTICAL ..... digital optical input selected
ANALOG ..... analog input selected
COPY PROTECT ..... no digital recording can be made of the external source
NOTFINALIZED ..... when opening the tray with an unfinalized disc inserted (CD recorder)
RECORD FAST ..... high speed recording selected
REC LISTEN ..... listen speed recording selected
MAKE CD ..... high speed recording of a complete disc and Auto Finalize function selected
REC EXT DISC ..... synchronised start of recording from external source selected
REC EXT MAN ..... manual start of recording from external source selected
-xx DB ..... level is being adjusted
DOES NOT FIT ..... time left on CDR(W) disc is not enough for proposed recording
ANALOG REC ..... copy prohibited track found during recording. Track will be copied analog (Copy Protection Regulations)
ERASE TRACK ..... when erasing one or more tracks
ERASE DISC ..... when erasing a disc
FINALIZE CD ..... when finalizing a disc
FINALIZED ..... when trying to finalize an already finalized disc
CHECK INPUT ..... when RECORD is pressed while no digital source is detected
xx xx ERASE ..... time countdown when erasing a track or a disc
xx xx FINAL ..... time countdown when finalizing a disc
PRESS RECORD ..... to start manual recording, finalizing or erasing
START SOURCE ..... to start synchronised recording from a source (e.g. CD player)
FINALIZED CD ..... when trying to record on a finalized CDR or a prerecorded CD
UNFINALIZE/ PRESS ENTER ..... when trying to record on a finalized CDRW
PROF SOURCE ..... when a professional source is connected
REC TEXT ..... when reading CD text from source disc for recording
TEXT PROTECT ..... when CD text of source disc is subjected to copy protection (CD text will not be recorded)

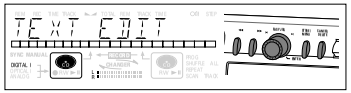
Play

CHANGER MODE ..... CD changer-mode selected
DJ MODE ..... DJ- mode selected when recording keys are pressed in DJ-mode
PROGRAM ..... program mode selected
ALBUM TITLE ..... will be followed by album title
TRACK TITLE ..... will be followed by track title
ALBUM ARTIST ..... will be followed by artist name
TRACK ARTIST ..... will be followed by track artist name

Others

NO AUDIO TR ..... when the recorder enters a data track during recording
FINALIZE CD ..... laser power calibration performed 96 times, finalize disc needed
INITIALIZING ..... during laser power calibration for unfinalized discs
DISC RECOVER ..... during disc recovering after power failure
OPC ERROR ..... OPC failure during OPC procedure (OPC = Optimum Power Calibration)
RECORD ERROR ..... recording error in menu mode
DISC ERROR ..... when trying to record on or finalize a recovered disc
MEMORY FULL/ FINALIZE CD ..... when text memory is full. To add a CD to the list, first finalize or erase another disc from the list
NOT POSSIBLE ..... when trying to erase a CDR

MENU messages - See Menu mode



Menu messages

NO TRACKS ..... when attempting to edit text for a disc which has no tracks
TEXT EDIT ..... when entering Text Edit mode
ALBUM ARTIST ..... when editing or erasing an artist name
ALBUM TITLE ..... when editing or erasing a title
ARTIST TR x ..... when editing or erasing an artist name per track
TITLE TR x ..... when editing or erasing a title per track
TEXT ERASE ..... when entering Text Erase mode
ALL TEXT ..... when entering All Text mode
ERASE OK ..... when confirmation for erasing has to be given with ENTER key
ERASE ALL OK ..... when confirmation for erasing has to be given with ENTER key
ERASE MEMORY ..... when waiting for confirmation when erasing a disc
MEMORY VIEW ..... when selecting text review per unfinalized disc in memory
MEMORY EMPTY ..... when REVIEW is selected while no text is in memory
AUTO TRACK ..... when selecting auto track increment ON or OFF
ON ..... auto track increment on
OFF ..... auto track increment off
SET BALANCE ..... when selecting BALANCE
NO TEXT ..... no text stored for disc

Connections general

For playback on the CD recorder (and/or CD player deck) the following outputs are present:
- Digital coaxial output (CD & CDR);
- Analog output (CD & CDR).

We advise you to connect these to the TAPE or CDR input on your amplifier.

For external recording the following inputs are present:
- Digital optical input;
- Digital coaxial input;
- Analog input.

For playback of CD player deck separately (DJ mode) from the CD recorder the following outputs are present:
- Digital coaxial output (CD);
- Analog output (CD).

We advise you to connect these to the CD input on your amplifier.

The connections you make will depend upon the possibilities your audio equipment offers. Please refer to the user manuals for your other audio equipment first.

Digital recordings (optical or coaxial) give the best performance in audio and usability (e.g. auto-track).

(The digital optical connection is less sensitive to external disturbances).
If your equipment does not offer digital connections, the high quality Analog-Digital-Convertor of your CD recorder will ensure very good audio performance when recordings are made from the analog input.

Playback via the digital coaxial output of the CD recorder gives the best audio performance.
If your equipment does not offer digital connections, the high quality Digital-Analog-Convertor of the CD recorder ensures a very good sound quality via the analog output.

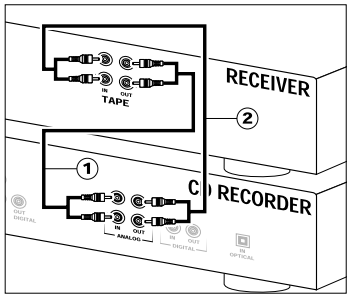
We advise you to always establish both digital and analog connections. In this way you can always make analog recordings when digital recording is not possible.

We have described the most common ways of connecting the CD recorder. If you still have difficulties with the connections you can always contact the Philips Consumer Service desk in your country.

English

Analog connections CD recorder & CD player

This connection must be made for playback on the CD recorder deck as well as the CD player deck (cable ②). Cable ① is only required if you want to make recordings from an external analog source.



Use the audio cables supplied. Connect the red plugs to the R sockets, and the white plugs to the L sockets.

1 For recording, connect cable ① between the ANALOG IN-sockets on the CD recorder and the CDR LINE- or TAPE OUT-sockets of an amplifier.

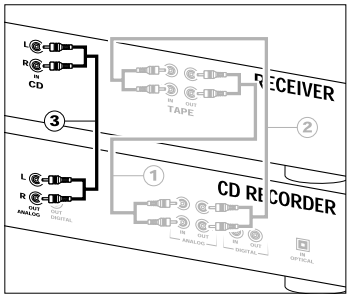
Note: For recording directly from a CD player, the analog input of the CD recorder should be connected to the analog output of the CD player.

2 For playback, connect cable ② between the ANALOG OUT-sockets on the CD recorder and the input sockets of an amplifier e.g. TAPE IN, CDR or AUX.

Note: Never use the PHONO input.

Analog connections CD player deck

This connection is only required if you want to playback on the CD player deck seperately from the CD recorder deck. This will be the case in DJ-mode.



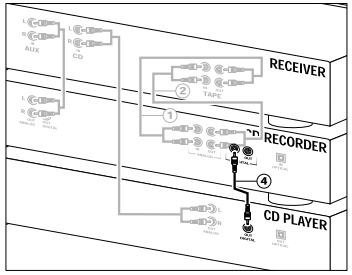
1 For separate playback on the CD player deck, connect a third cable ③ (not supplied) between the ANALOG OUT sockets of the CD recorder and the input sockets of an amplifier e.g. CD, or AUX.
(Connect the red plugs to the R sockets, and the white plugs to the L socket.)

Note:
- Never use the PHONO input.
- Your CD recorder/player is equipped with a digital coaxial output for the CD player deck. This output can be used for digital playback.

English

Digital coaxial connections CD recorder

This connection is only required if you want to make recordings from an external CD player with a digital coaxial output.



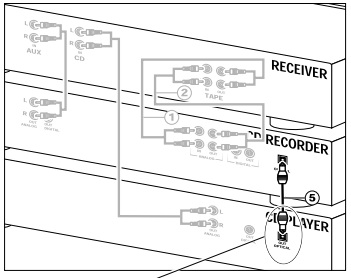
Use the digital coaxial cable supplied.

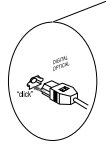
1 For external recording, connect the cable ④ between the DIGITAL IN-socket on the CD recorder and the DIGITAL OUT-socket of an external CD player.

Note: Your CD recorder is equipped with a digital coaxial output (common output for CD recorder & CD player deck). This output can be used for digital playback.

Digital optical connections CD recorder

This connection is only required if you want to make recordings from an external CD player with a digital optical output.





When connecting the Digital Optical cable, make sure it is fully inserted until there is a click.

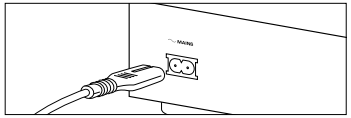
1 Remove the dust caps from the digital optical connection. (We recommend you save the cap.)

2 For external recording, connect a fibre-optic cable ⑤ between the digital optical input of the CD recorder and the digital-optical output of an external CD player.

Note: For playback, the digital coaxial outputs or analog outputs of the CD Player and CD recorder should be connected to an amplifier.

INSTALLATION

Power supply



1 Plug the power cord supplied into the MAINS connector on the CD recorder, then into a mains socket.

2 Press ON/OFF.
➜ The CD recorder will switch on.

3 The recorder switches automatically to active mode.

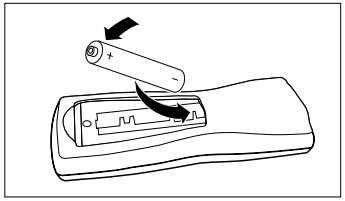
Note: When the CD recorder is in the 'OFF' position, it is still consuming some power. If you wish to disconnect your player completely from the mains, withdraw the plug from the AC outlet.

Setup recommendations

- Place the CD recorder on a solid, vibration free surface.
- Do not place the CD recorder near a source of heat or in direct sunlight.
- Do not use the CD recorder under extremely damp conditions.
- If the CD recorder is placed in a cabinet, make sure that a 2.5 cm space remains free on all sides of the CD recorder for proper ventilation.

Important:
- Do not put the CD recorder on top of other equipment that heats up the CD recorder (e.g. receiver or amplifier).

Inserting batteries in the remote control



1 Open the battery compartment cover.

2 Insert 2 batteries ("AA", LR-6 or UM-3; as supplied) as shown.

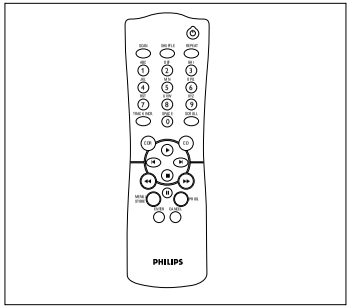
3 Replace the cover.

Note: We recommend you use 2 batteries of the same type and condition.

Batteries contain chemical substances, so they should be disposed of properly.

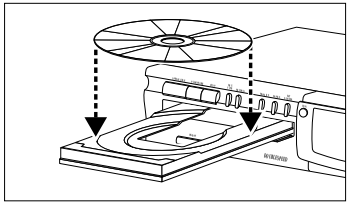
REMOTE CONTROL

Remote control commands



STANDBY ⏻ .....switches to Standby/On
SCAN .....plays the first 10 seconds of each track
SHUFFLE.....plays CD(RW) or program in random order
REPEAT.....repeat play
Number/alphabet keys 0 - 9
.....- selects a track by number
- selects character for text input
TRACK INCR(ement) .....increases track numbers during recording
SPACE.....inserts a space character during text input
SCROLL.....activates scrolling of text over the display
CDR .....selects CD recorder deck
CD .....selects CD player deck
▶ .....starts CD(RW) play
|◀ .....- previous track (Play and Program mode)
- cursor control in Menu/Prog. review mode
▶| .....- next track (Play and Program mode)
- cursor control in Menu/Prog. review mode
■ .....stops CD(RW) and clears a program
◀◀.....searches backward
▶▶.....searches forward
II .....interrupts CD(RW) play/recording
MENU/STORE .....- enters Menu mode
- stores Menu settings
PROG.(ram).....opens/closes program memory
ENTER.....- selects settings in Menu mode
- programs track numbers
- starts playback of selected track
CANCEL .....- deletes tracks from a program
- deletes text in Menu mode
- returns to a higher level in the menu

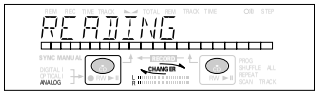
Inserting discs



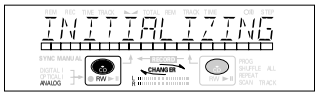
1 Press OPEN/CLOSE to open the disc tray.
➜ OPEN lights up.

2 Insert a CD, CDR or CDRW in the appropriate recess in the tray, label side up.

3 Press OPEN/CLOSE to close the tray (see also Playing a CD).
➜ CLOSE lights up, followed by READING and the display will show the type of disc you inserted.

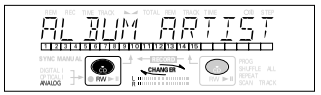


- If you insert a blank or partly-recorded CDR or unfinalized CDRW, the CD recorder will calibrate the disc for optimum recording. During this process the display will first show INITIALIZING and then the number of audio tracks. Calibration can take up to 25 seconds.



- If a CDR(W) is finalized it will show **CD** on the display.

- If CD-text is available the TITLE/ARTIST will scroll by.



Note:
- *Only Audio CDs will be accepted. If a non-audio disc is inserted, the display shows* WRONG DISC/ USE AUDIO CD.
- *Reading an unfinalized disc in the CD recorder deck could take approximately 1 minute.*
- *For recording it is important that the blank disc is completely free from dust particles or scratches. (see maintenance).*

English

Remarks about recording

You will soon discover how easy it is to make your own CDs. Nevertheless, it is advisable to use a CDRW disc for your first try.
We will describe:
- Recording from internal CD player deck: high speed or listen mode.
- Recording from an external CD player deck: syncronized start with CD player or manual start. (analog or digital).

- If the disc is a CDRW and is already finalized you must unfinalize it first.

- The recording procedure is the same for CDRs and CDRWs.

- If the disc already contains recordings, the CD recorder will automatically search for the end of the last track, so that recording can start from there.

- CD text can be added to a recording in Stop mode and during recording.

- CD text can not be recorded from an external CD player. (Text information is not available on the output of the CD player.)

- The CD recorder deck is able to record CD text from the internal CD player deck. (If not subjected to copy protection.) This may take up to 2 minutes.

- There must be at least 7 seconds of recording time left on the disc, otherwise you will not be able to enter record standby mode. DISC FULL then lights up.

- If the display indicates COPY PROTECT, no digital recording can be made of the source material. Recording will not start.

- The **Serial Copy Management System** (SCMS) only allows digital recording under specific conditions:
  - This means that it is not possible to make a digital copy from a digital copy.
  - Analog recording is always possible!
  - The number of recordings from the original is unlimited.

- A maximum of 99 tracks can be recorded on a disc. Minimum allowable track length is 4 seconds.

- Recordings from DAT or DCC players will not always stop automatically.

Important:
If you want to play the recorded CDR disc on any regular CD player, it must first be finalized. See finalizing discs.

Finalized CDRW discs play only on CDRW compatible CD players.

For recording from CD changers always use *REC EXT DISC*.

Recording modes

Your recorder offers several recording modes.

For recording from internal CD-deck:

- *RECORD FAST* (high speed digital recording) - fast recording of a disc or programmed tracks.
- *REC LISTEN* (normal speed digital recording) - listening to a recording while making it.
- *MAKE CD* (high speed digital recording and auto-finalize) - fast recording of a disc or programmed tracks. Recording will be finalized automatically.

Warning: *No more recording possible after finalizing CDR disc!*

For recording from external sources:

- *REC EXT DISC* (automatic start of recording) - to make an automatic recording of an external source simply by starting the source.
- *REC EXT MAN* (manual start of recording) - to start a manual recording from an external source.

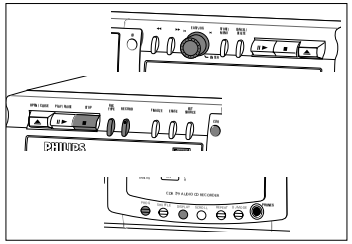
Some remarks on recording:

- During high speed recording, the original recording quality will be maintained.
- When Auto track is on (default setting), track numbers will automatically be increased during recording.
- By programming tracks first, a compilation can be recorded.
- If a finalized CD recordable disc is inserted in the CD recorder, FINALIZED CD will be displayed when REC TYPE is pressed. Recording is not possible.
- If a finalized CD rewritable disc is inserted in the CD recorder, UNFINALIZE and PRESS ENTER will be displayed when the REC TYPE is pressed. If ENTER is pressed, the disc will be unfinalized.

Note: If during recording ANALOG REC appears, the track will be recorded as analog, at normal speed. All other tracks will be copied normally (at double speed).

English

High speed recording from internal CD player



During high speed recording the sound is not audible.

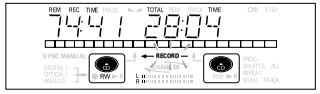
Preparing for high speed recording

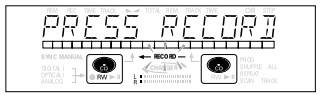
1 Make sure that the recording disc is absolutely free of scratches and dust particles.

2 (Press REC TYPE) to choose the type of recording:

once: to select '*RECORD FAST*' if you wish to make a fast recording of a disc or programmed tracks;
three times: to select '*MAKE CD*' if you wish to make a fast recording of a disc or programmed tracks and to automatically finalize the recording.

➜ The display first shows the selection.
The ← **RECORD –** label starts blinking. After 3 seconds the display shows the remaining CDR(W) recording time on the left and total time of source on the right. (every 2 seconds PRESS RECORD is displayed.) The left selection indicator is lit.





- If DOES NOT FIT appears on the display, there is not enough recording space left on the CDR(W) disc.
  You can press RECORD: only complete tracks that still fit on the CDR(W) will recorded.

or

  You can press PROG to select one or more tracks for recording (see programming):
  - rotate the EASY JOG/ENTER key to the required track number, then press the key (or ENTER on the remote control)
    or
  - directly select the track number via the 10-keypad on the remote control then press the ENTER key to confirm your selection and go to the next step.

Start high speed recording

1 (Press RECORD) to start recording.

➜ WAIT lights up. The display shows the total remaining time for the selected recording. High speed recording starts. ← **RECORD –** lights continuously.

- To check the track number and track time, press DISPLAY. This can be done during recording.

- Recording will stop automatically.

Note: Copy prohibited tracks will be copied analog. ANALOG REC *is displayed.*

2 To stop recording manually, press STOP.

➜ UPDATE lights up, ← **RECORD –** goes out and recording stops. (Minimal track length must be 4 seconds otherwise silence will be added to the track.)

- If STOP was pressed within 3 seconds after RECORD, no recording will take place.

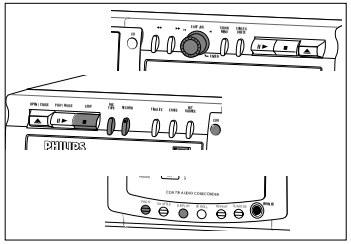
After recording, the display shows UPDATE for several seconds. The Total time indications can differ slightly. However, no music information is lost.

Note: In this Recording mode, the Pause function is not operative.

Important:
If you want to play the recorded CDR disc on any regular CD player, it must first be finalized. See finalizing discs.

Finalized CDRW discs play only on CDRW compatible CD players.

Listen mode recording from internal CD player



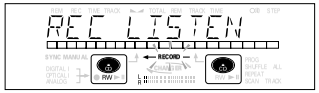
During Listen mode recording you listen to the recording while you are making it.

Preparing for Listen mode recording

1 Make sure that the recording disc is absolutely free of scratches and dust particles.

2 For recording, press REC TYPE twice:

➜ The display first shows the selection.
The ← **RECORD –** label starts blinking. After 3 seconds the display shows the remaining CDR(W) recording time on the left and total time of source on the right. (every 2 seconds PRESS RECORD is displayed) The left selection indicator is lit.



- If DOES NOT FIT appears on the display, there is not enough recording space left on the CDR(W) disc.
You can press RECORD: only complete tracks that still fit on the CDR(W) will recorded.

or

You can press PROG to select one or more tracks for recording (see programming):
- rotate the EASY JOG/ENTER key to the required track number, then press the key (or ENTER on the remote control)

or
- directly select the track number via the 10-keypad on the remote control then press the ENTER key to confirm your selection and go to the next step.

3 Play the source first to set the optimal recording level on the CD recorder.

4 Rotate the EASY JOG/ENTER key until, on the Record/Play Level bar, all the blue segments are alight, but the red segments do not light continuously during the loudest passages.
➜ Display shows – xx DB (Decibel, e.g. -3DB).

5 Stop the source.

Start Listen mode recording

1 To start recording, press RECORD.

➜ WAIT lights up. ← **RECORD –** lights continuously and the selected track or program is copied at normal speed. The track number and the recording time left will appear.

- To check the track time, press DISPLAY. This can be done during recording.
- Recording will stop automatically.

Note: Copy prohibited tracks will be copied analog. ANALOG REC is displayed.

2 To stop recording, press STOP.

➜ UPDATE lights up, ← **RECORD –** goes out and recording stops. (Minimal track length must be 4 seconds otherwise silence will be added to the track.)

- If STOP was pressed within 3 seconds after RECORD, no recording will take place.

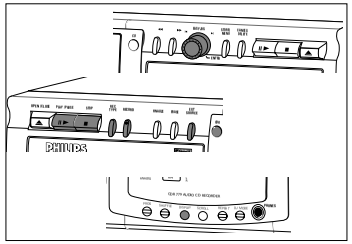
After recording, the display shows UPDATE for several seconds. The Total time indications can differ slightly. However, no music information is lost.

Note: In this Recording mode, the Pause function is not operative.

Important:
If you want to play the recorded CDR disc on any regular CD player, it must first be finalized. See finalizing discs.

Finalized CDRW discs play only on CDRW compatible CD players.

Manual recording from external CD player



Important:
- Recording from CD-changers should always be started in the Auto-Start mode.
- Only make analog recordings when digital recording is not possible.

Preparing for manual recording

1 Make sure the disc is absolutely free of scratches and dust particles.

2 Press EXT(ernal) SOURCE repeatedly until (depending on the connection used):
➜ DIGITAL I, OPTICAL I or ANALOG lights up and DIGITAL I, OPTICAL or ANALOG appears on the display.

- When Auto Track is On (default setting), track numbers will automatically be increased during recording.
- To switch off the Auto Track function you have to enter Menu mode.
If you wish to increase track numbers manually, press TRACK INCR(ement) on the remote control. For further instructions see Menu mode.

ON (Auto): The track increments are automatically taken over from the digital source material or after 2.7 seconds silence during analog recording.

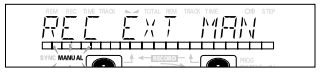
OFF (Manual): While recording track numbers can be incremented manually by pressing TRACK INCR(ement) on the remote control. (Minimum track length is 4 sec.) (This can also be done in Auto track ON mode.)

- Track numbers cannot be changed after recording.

Note: Auto track works only with Consumer Sources with a digital output signal according to the IEC 958 (consumer part) audio standard.

3 With the recorder stopped, press REC TYPE five times to enter the Manual Record standby mode.

➜ Display shows REC EXT MAN followed by WAIT. After a few seconds PRESS RECORD followed by the remaining time and track number appear on the display.



4 Play the source first to set the optimal recording level on the CD recorder.

5 Rotate the EASY JOG/ENTER key until, on the Record/Play Level bar, all the blue segments are alight, but the red segments do not light continuously during the loudest passages.
➜ Display shows – xx DB (Decibel, e.g. -3DB).

6 Stop the source.

Start manual recording

1 To start recording, press RECORD on the CD recorder and immediately start the source (from Pause or Stop-mode).
➜ ⌐ lights continuously. The track number and recording time left appear on the display.

- If CHECK INPUT message also flashes, the digital connection is incorrect.
- To record a 3-second silence at the start of a track, press PAUSE on the CD recorder before starting the source.
- To check the total remaining recording time, press DISPLAY on the CD recorder. (This can also be done during the recording.)

2 To stop recording, press STOP on the CD recorder.

➜ UPDATE lights up and ⌐ goes out.

- If STOP was pressed within 3 seconds after RECORD, no recording will take place.
- To interrupt recording, press PAUSE on the CD recorder. ⌐ starts to flash. Press PAUSE again to restart recording. (A new track will always be made.)

After recording the display will show UPDATE for several seconds.

Note: Recordings made analogously will stop after 20 seconds silence. With AUTO TRACK OFF, the auto stop mode is disabled.

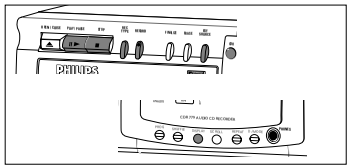
Important:
If you want to play the recorded CDR disc on any regular CD player, it must first be finalized. See finalizing discs.

Finalized CDRW discs play only on CDRW compatible CD players.

For recording from CD changers always use *REC EXT DISC*.

English

Autostart recording from external CD player CD-SYNC

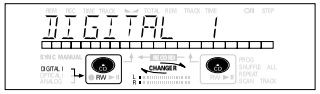


The CD-SYNC feature enables you to make fast and easy recordings of a CD. Track increments are automatically detected from the source material. Track increments cannot be added manually. In analog source material a silence of 2.7 seconds or more is automatically detected as a track increment.

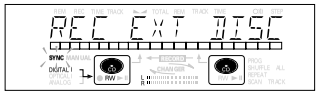
Preparing for autostart recording

1 Make sure the disc is absolutely free of scratches and dust particles.

2 Press EXT(ernal) SOURCE repeatedly until (depending on the digital connection used):
➜ DIGITAL I, OPTICAL I or ANALOG lights up and DIGITAL I, OPTICAL or ANALOG appears on the display.



3 With the CD recorder stopped, press REC TYPE four times: if you wish to record a complete disc or program.
➜ ⌙ and **SYNC** start to flash and the display shows REC EXT DISC and WAIT followed by the track number, the total remaining time and START SOURCE.



• If input label (DIGITAL I) flashes, the digital connection is incorrect.

Start autostart recording

1 To start recording, press PLAY on the selected source.

➜ The CD recorder automatically starts to record and ⌙ and **SYNC** lights continuously. The track number and track time appear on the display.

• If, however, you start the source during a track, CD-SYNC recording starts at the beginning of the next track or after 2.7 seconds of silence in analog recordings.

• To check the remaining recording time on the CDR(W), press DISPLAY. (This can also be done during recording.)

• The EASY JOG/ENTER key can be used to adjust the recording level.

• The recorder stops automatically.

2 To stop recording manually, press STOP on the CD recorder.

➜ UPDATE lights up and **SYNC** and ⌙ go out.

• If STOP ■ was pressed within 3 seconds after pressing PLAY, no recording will take place.

• To interrupt recording, press PAUSE on the CD recorder.
➜ ⌙ starts to flash. (Autostart recording is disabled.) To resume, press RECORD on the CD recorder.

After recording the display will show UPDATE for several seconds.

Note: Auto track is always active.

Important:
If you want to play the recorded CDR disc on any regular CD player, it must first be finalized. See finalizing discs.

Finalized CDRW discs play only on CDRW compatible CD players.

For recording from CD changers always use REC EXT DISC.

English

Finalizing CDR & CDRW discs

During finalizing the Table of Contents (TOC) is written to the disc.

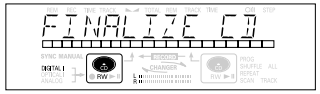
Finalizing is a simple procedure, necessary to:
- be able to play recordings on a CD PLAYER,
- avoid further unwanted recordings on a disc,
- avoid erasure of tracks on a CDRW,
- write CD text on a CDR(W).

Auto finalizing
Auto finalizing is possible when using the MAKE CD recording function.

Manual finalizing

1 Make sure the disc (in the CD recorder deck) is absolutely free of scratches and dust particles.

2 With the recorder stopped press FINALIZE.
➜ The display shows FINALIZE CD and PRESS RECORD.



3 Press RECORD.
➜ xx xx FINAL and the approximate finalization time appears on the display.
The display counts down through the finalization.
On completion, the total number of tracks and the total time recorded appears on the display.
For CDR(W), ■ changes to ■ on display.

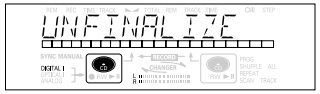
Finalizing will take at least 2 - 4 minutes.

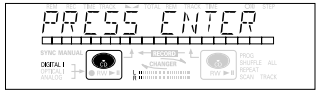
Note:
- During finalization, the CD recorder accepts no operating commands.
- When a CDR is finalized no more recordings can be added.

Unfinalizing CDRW discs

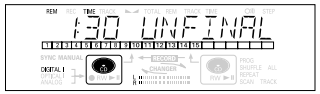
For CDRW discs only.
If you want to make more recordings (or erasures of tracks) on a finalized disc you must unfinalize it first. The Table of Contents (TOC) will be removed. (This is not possible for CDR discs.)
To unfinalize:

1 With the CD recorder stopped, press REC TYPE or ERASE.
➜ UNFINALIZE and PRESS ENTER will appear on the display.





2 Press JOG (ENTER).
➜ The disc will now be unfinalized and can be recorded on again and the Recording or Erasure mode is entered.

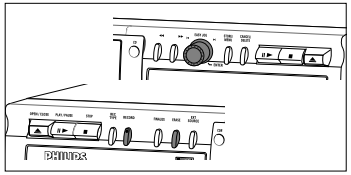


3 You can now start recording or erasing. If no further recording or erasure is required press STOP ■.

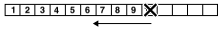
Note:
- Unfinalizing will take approximately 1 minute 30 seconds.
- When unfinalizing a CDRW disc with text on it available, this text will be transferred to the CD recorder memory. It may occur that the text memory is full. The message MEMORY FULL/FINALIZE CD *will be displayed. To empty the recorders text memory you have to erase text from it. This can be done in two ways:*
1) Finalize one or more unfinalized discs for wich CD text is available.
2) Delete text of unfinalized discs with the 'memory view' option in the Menu mode.

RECORDING

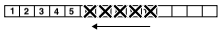
Erasing CDRW discs



For unfinalized CDRW discs only.
You can erase:
- Tracks can only be erased from the end.



- With the EASY JOG you can erase more tracks.



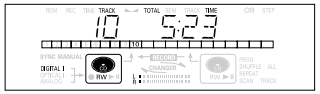
Note: It is not possible to erase tracks within the sequence.
- It is also possible to erase the entire disc at once.

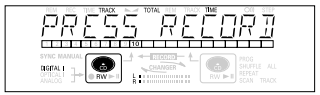
To erase one or more tracks from the end:

1 Press ERASE once.
➜ The display shows the number of tracks and their total playing time. ERASE TRACK and PRESS RECORD lights up.

• If the disc is finalized, **CD** appears on the display after inserting a CDRW in the recorder. The recorder will ask you to confirm unfinalizing first. Confirm by pressing the EASY JOG/ENTER key or ENTER on the remote control.

2 Select the track(s) you wish to erase by turning the EASY JOG/ENTER key to the left.
➜ The selected track numbers start blinking on the track bar.
➜ The display shows the remaining time after erasing the selected track(s), the shown track will also be included in the erasure of tracks.



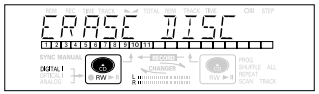


3 Press RECORD.
➜ The display shows the total countdown time and ERASE.
➜ After the selected track(s) have erased, the display shows the remaining tracks and their total playing time.

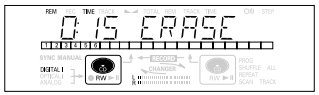
To erase the entire disc:

1 In stop mode press ERASE twice.
➜ ERASE DISC and PRESS RECORD light up.

• If the disc is finalized, **CD** appears on the display after inserting a CDRW in the recorder. The recorder will ask you to confirm unfinalizing first. Confirm by pressing the EASY JOG/ENTER key or ENTER on the remote control.



2 Press RECORD.
➜ The display shows the total countdown time and ERASE. The complete disc will be erased.



Erasure of a complete disc may take up to 15 seconds.

PLAYING

Play a 2-disc changer (Changer mode)

Your CD recorder is able to play the two decks sequentially (CHANGER mode). This is the default setting.

1 Select Changer mode using the DJ MODE key.
➜ CHANGER MODE appears on the display and **CHANGER** lights up.

2 On the deck you want to play, press PLAY/PAUSE ▶ II to start CD play.
➜ ▶ lights up, the track number and track time of the track in play appear on the display.
➜ After playing the first disc the second disc will automatically be played.

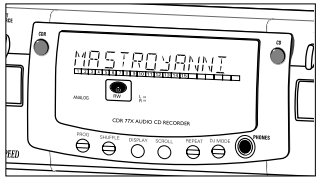
• Press DISPLAY once, twice or three times to see:
➜ remaining track time, total remaining time, permanent text information (see Menu mode).

• To interrupt play temporarily, press PLAY/PAUSE ▶ II again.
➜ II lights on the display.

• To continue play, press PLAY/PAUSE ▶ II again.

3 To stop play, press STOP ■.
➜ The number of tracks and the total playing time appear on the display.

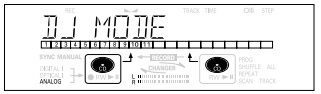
• If you want to see the information about the other deck, press the CDR key or the CD key in the display frame.



Playing CDs on Deck 1 and/or Deck 2 (DJ mode)

With this double deck it is possible to play the CD recorder deck and/or the CD player deck individually (at the same time). In this case the extra CD output must also be connected to an amplifier.

1 Select DJ mode using the DJ MODE key.
➜ DJ MODE appears on the display and ⌟ ⌞ lights up.



2 On the deck you want to play, press PLAY/PAUSE ▶ II to start CD play.
➜ ▶ lights up and the track number and track time of the track in play appear on the display.

• You can also play the two decks at the same time. By pressing the CDR key or the CD key you can choose the deck you want to listen to.

• Press DISPLAY once, twice or three times to see:
➜ remaining track time, total remaining time, permanent text information (see Menu mode).

• To interrupt play temporarily, press PLAY/PAUSE ▶ II again.
➜ II lights on the display.

• To continue play, press PLAY/PAUSE ▶ II again.

3 To stop play, press STOP ■.
➜ The number of tracks and the total playing time appear on the display. If you want to see this information about the other deck, press CDR or CD.

Intro Scan

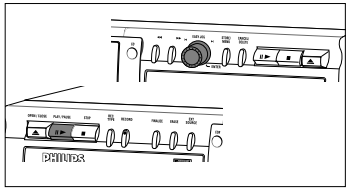
1 In stop mode press SCAN on the remote control.

2 The first 10 seconds of each track on the CD (or program if set) are played.

3 Press SCAN again to return to normal CD play mode.

English

Selecting a track



Selecting a track during play

1 Turn the EASY JOG/ENTER key until the required track number appears on the display.
➜ Play skips to the beginning of the selected track.
or
Select CDR or CD on the remote control and key in the required track number using the numerical keys on the remote control. For 2-digit track numbers, press the keys in rapid succession. For tracks on the other disc, first press CD or CDR as applicable.
➜ Play skips to the beginning of the selected track.
or
Press ⏮ or ⏭ on the remote control one or more times.
➜ Play skips to the beginning of the present, previous or subsequent tracks, including tracks on the disc in the other deck. (Changer mode only.)

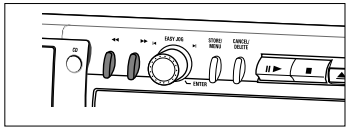
Selecting a track when CD play is stopped

1 Turn the EASY JOG/ENTER key until the required track number appears on the display.

2 Press EASY JOG/ENTER or ENTER on the remote control to confirm or press PLAY/PAUSE ▶ ❚❚ to start playing.
or
1 Select CDR or CD on the remote control and key in the required track number using the numerical keys. For 2-digit track numbers, press the keys in rapid succession. Play starts.
or
1 Briefly press ⏮ or ⏭ one or more times.

2 Start playback by pressing PLAY/PAUSE ▶ ❚❚, EASY JOG/ENTER or ENTER on the remote control.

Search



1 Hold down ◀◀ or ▶▶ (in play mode).
➜ The player first searches backwards or forwards at 10 times normal speed with sound at low volume, then goes to 50 times normal speed with sound muted.

2 Release the button at the desired passage.
➜ Play starts at the desired passage.

Note: During Shuffle, Repeat Track or Programmed play, search is restricted to within the track being played at the time.

English

Shuffle (random order) play

Only in Changer mode.

1 Select Changer mode, if nessesary, using the DJ MODE key.

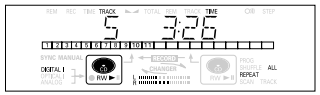
2 Press SHUFFLE before or during CD play to start shuffle play.
➜ The tracks on the CD (or program if set) play in random order.

3 Press SHUFFLE again to disable the Shuffle mode.
➜ CD recorder goes to Stop mode.

Note: Shuffle is also cleared if you open the disc tray.

Repeat CD, track or program

1 Press REPEAT one or more times during CD play.
➜ When **REPEAT TRACK** lights up, the current track plays repeatedly. When **REPEAT ALL** lights up, the disc or program plays repeatedly.



2 To return to normal play, press REPEAT one or more times until:
➜ the **REPEAT** label disappears from the display.

Note:
*- You can use shuffle in combination with **REPEAT ALL** or programmed play of the 2-disc changer.*
*- **REPEAT** is also cleared if you open the disc tray.*

PROGRAMMING

Remarks about programming

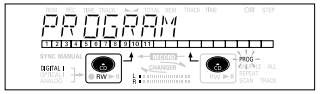
- You can program up to 99 tracks to play in any desired sequence.
- Tracks can be programmed more than once, but each time counts as a track. (**STEP**)
- A program for playback can be made from both the disc in the recorder deck and the disc in the player deck. A program for recording can only be made from the disc in the player deck.

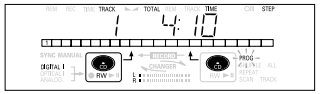
Programming for playback

1 Select Changer mode or DJ mode using the DJ MODE key.
➜ CHANGER MODE or DJ MODE appears on the display.

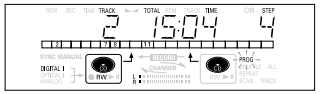
2 Press CDR or CD to select the required deck.
➜ Selected key lights up.

3 Press PROG(ram) to enter Program mode.
➜ **PROG** flashes and PROGRAM followed by track information appears on the display.





4 Select the required track numbers by turning the EASY JOG/ENTER key left or right and store by pressing ENTER.



or:
Key in a track number with the number keys on the remote control and press ENTER to confirm. For 2-digit numbers, press the keys in rapid succession.
➜ The track will be stored in the program.

➜ The track number, total program time and the number of programmed tracks (**STEP**) are displayed.

5 Repeat step **4** for all tracks to be programmed.

6 Press STOP or PROG(ram) to end programming.
➜ **PROG** lights continuously.

7 Press PLAY/PAUSE ▶II to start programmed play.

Note:
- To review the program, press PROG(ram), followed by ◀◀ or ▶▶ with the CD player or CD recorder in stop mode.
*- To add more tracks to the program, repeat steps **2** to **6**.*
- If you try to store more than 99 tracks, PROG FULL appears on the display.

Programming for recording

1 Press REC TYPE to select the required recording mode (see 'Recording').

2 Compile your programme as described in "programming for playback". (steps **3** to **5**)

- Only tracks from the disc in the CD player can be stored.

3 Press RECORD to start recording.

Clearing a program

1 Press STOP ■ if necessary to stop programmed play.

2 Press STOP ■ again to clear the program.
➜ **PROG** disappears from the display.

- The program is also cleared if you open the disc tray.

Erasing a track from a program

1 In Stop mode press PROG(ram) to enter Program mode.

2 Use ◀◀ or ▶▶ to select the track that has to be deleted.
➜ The track number and program step will be shown on the display.

3 Press CANCEL/DELETE to erase the track from the program.
➜ The remaining program steps and the remaining playing time of the program will be displayed.

4 Repeat step **2** and **3** for all tracks to be erased.

5 Press STOP ■ or PROG(ram) to end erasing.
➜ **PROG** lights continuosly.

MENU MODE

Remarks about Menu mode

- In Menu mode you will have access to a number of features which are not available via the regular keys (on the deck's front and the remote control).
- The TEXT submenus (A-B) allow you to give names to discs and tracks. The disc and track names will be displayed during playback.
- In the RECORDING submenus (D-E) you can set Auto Track and Balance.
- All settings (except Balance) made in Menu mode will be stored in the deck's memory and can be called up and changed at any time.

General operation of Menu

Menu active in Recording or Stop mode.

1 When using the remote control select first CDR.

2 Press STORE/MENU on the deck or the remote control to enter Menu mode.
➜ TEXT EDIT appears on the display.

3 Rotate EASY JOG/ENTER to select the required submenus.

4 Press EASY JOG/ENTER to confirm selections.

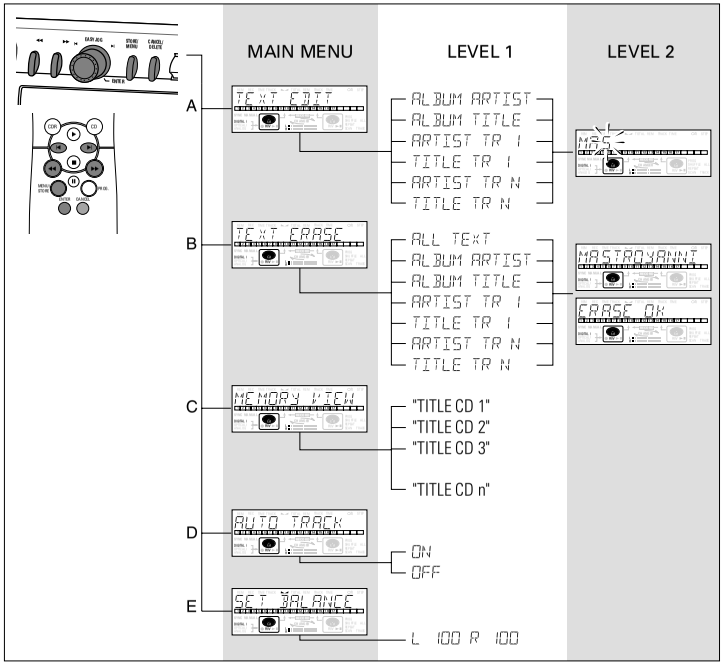
5 Rotate EASY JOG/ENTER to select options in the submenus.

6 Press EASY JOG/ENTER to confirm selections.

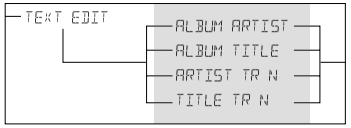
7 Press STORE/MENU to store settings and return to the submenu.

8 Press STOP ■ to store settings and exit Menu mode.

Note: Text can only be edited for unfinalized discs. (Finalized CDRW discs must be unfinalized first.)



A. Text input/text edit



CD Text can be added to a recording or changed.This can be done in Stop mode or during recording.

Text will be stored in the recorder memory and can be edited until the CDR is finalized. Text on a (unfinalized) CDRW can be edited at any time.

1 Press STORE/MENU.
➜ TEXT EDIT appears on the display.

2 Press EASY JOG/ENTER to confirm.
➜ ALBUM ARTIST appears on the display.

3 Rotate EASY JOG/ENTER to select the required option in the submenu: ALBUM ARTIST, ALBUM TITLE, ARTIST TR 1, TITLE TR 1, etc.

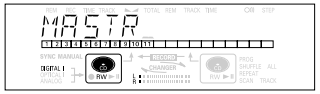
4 Press EASY JOG/ENTER to confirm.
➜ The first character space appears on the display.

5 Select the characters by rotating the EASY JOG/ENTER key or by pressing the corresponding numeric/alphabet key on the remote control.

6 Press EASY JOG/ENTER to store each character and move to the next cursor position.

• With the ◀◀ ▶▶ keys you can move to a required cursor position.

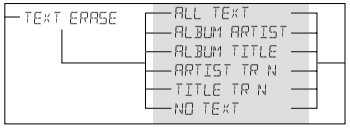
• With the CANCEL key you can delete a character.



7 Press STORE/MENU to store a name you have entered and return to the submenu resume at **3** or STOP ■ to exit.

Note:
- A maximum of 60 characters can be stored per item.
- By pressing the EASY JOG/ENTER key or ENTER on the remote control without selecting a character first, you can insert a space between characters.
- When an artist's name has been stored for a certain track, the name will automatically be copied for the next track. The name can be confirmed by pressing STORE/MENU or a new name can be entered as described above.

B. Erasing text/text erase



1 Press STORE/MENU.
➜ TEXT EDIT appears on the display.

2 Rotate the EASY JOG/ENTER key to select the TEXT ERASE submenu.
➜ TEXT ERASE appears on the display.

3 Press EASY JOG/ENTER to confirm.
➜ If text is available ALL TEXT appears on the display. (When there is no text available the message NO TEXT appears on the display.)

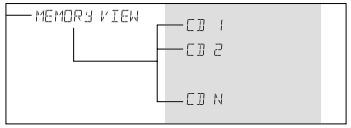
4 Rotate EASY JOG/ENTER to select the required option in the submenu: ALL TEXT, ALBUM ARTIST, ALBUM TITLE, ARTIST TR 1, TITLE TR 1, etc.

5 Press EASY JOG/ENTER to confirm.
➜ The display will ask you to reconfirm your selection. ERASE OK appears on the display.

6 Press EASY JOG/ENTER to reconfirm.
➜ UPDATE appears on the display.

7 Press STORE/MENU to return to the submenu or STOP ■ to exit.

C. Reviewing CD Text in memory/memory view



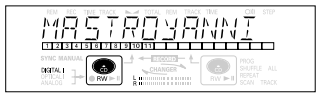
CD Text is stored in the recorders memory. When a CDR(W) will be finalized the CD Text will be written on the disc and removed from the recorders memory. With the MEMORY VIEW function one can view/delete the CD Text in the recorders memory per unfinalized disc. The amount of memory used is displayed each time the tray opens with an unfinalized CDR(W) inserted.
(e.g. MEMORY 99%)

1 Press STORE/MENU.
➜ TEXT EDIT appears on the display.

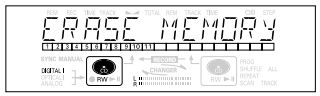
2 Rotate the EASY JOG/ENTER key to select the MEMORY VIEW submenu.
➜ MEMORY VIEW appears on the display.

3 Press EASY JOG/ENTER to confirm.
➜ The first album title in the recorder memory appears on the display.

4 Select the album title you wish to erase by rotating the EASY JOG/ENTER key.



5 Press EASY JOG/ENTER to confirm.
➜ ERASE MEMORY appears on the display.



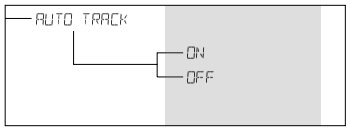
6 Press the EASY JOG/ENTER key to confirm the erasure of the text for that particular disc.
➜ UPDATE appears on the display.

7 Press STORE/MENU to return to the submenu or STOP ■ to exit.

Note:
- If there are no discs in the memory, the message MEMORY EMPTY appears on the display.
- When the text memory of your CD recorder is full, the message MEMORY FULL will appear, followed by FINALIZE CD. If you want to add a CD to the list of discs for which text is stored, you have to erase a disc from this list or finalize another disc. ("for which text is stored")
- MEMORY FULL/FINALIZE CD may also appear when unfinalizing a CDRW disc for which text was stored (see 'Unfinalizing CDRW discs'). The same action(s) should be taken in order to obtain memory space.

MENU MODE/RECORDING SETTINGS

D. Auto track increment/auto track



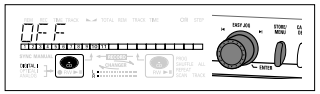
1 Press STORE/MENU.
➜ TEXT EDIT appears on the display.

2 Rotate the EASY JOG/ENTER key to select the AUTO TRACK submenu.
➜ AUTO TRACK appears on the display.

3 Press EASY JOG/ENTER to confirm.
➜ ON or OFF appears on the display.

4 Turn the EASY JOG/ENTER key to select Auto track ON or OFF.

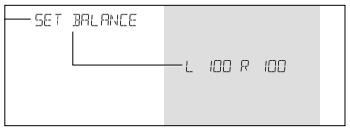
- When ON is selected, track numbers will be automatically incremented during recording.
- When OFF is selected, you can number the recorded tracks yourself.



5 Press EASY JOG/ENTER to confirm.
➜ AUTO TRACK appears on the display.

6 Press STORE/MENU to store settings and return to the submenu or STOP ■ to exit.

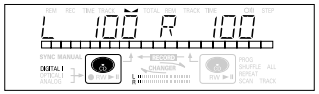
E. Balance (only active in Record/Standby mode)



1 Press STORE/MENU.
➜ TEXT EDIT appears on the display.

2 Rotate the EASY JOG/ENTER key to select the SET BALANCE submenu.
➜ SET BALANCE appears on the display.

3 Press EASY JOG/ENTER to confirm.
➜ ◣◢ and L 100 R 100 appear on the display.



4 Adjust recording balance by turning the EASY JOG/ENTER key.

- Turn left: the figure left (◣) counts down, right counts up.
- Turn right: the figure right (◢) counts down, left counts up.

5 Press EASY JOG/ENTER to confirm.

6 Press STORE/MENU to store settings.

Note: The balance setting will not be stored permanently.

FIXING PROBLEMS

TROUBLESHOOTING

If your CD recorder is defective, it is wise to check this list first. You may have forgotten a simple step.

Warning!
Under no circumstances should you attempt to repair the CD recorder yourself as this will invalidate the guarantee.

SYMPTOM • possible solution:

No power
- ensure that the ON/OFF button is on (red led on): the CD Recorder is in standby mode, press any key to activate it
- ensure that the mains cable is plugged in correctly
- switch the recorder OFF and then immediately back ON

Auto track does not work
- check if auto track on is selected in the menu
- check if there are 2.7 seconds silence in between the tracks (analog recording only)
- check if the source is a consumer source with the digital output according to the IEC audio standard
- source is DVD player (no track information)

No sound
- check the audio connections
- if using an amplifier, try using a different source

Amplifier sound is distorted
- check that the CD recorder analog output is not connected to the amplifier Phono input

Play will not start
- ensure that the label of the CD is facing up
- clean the disc
- check that the disc is not defective by trying another disc

Remote control does not work
- point the remote control towards the CD recorder
- check the batteries and replace if necessary
- select the correct source first

Will not record
- clean the disc
- check if CDR(W) is an unfinalized disc
- check that the disc is recordable and replace if necessary
- the disc is not an AUDIO disc (WRONG DISC)
- wrong input source chosen. Input label flashing (CHECK INPUT)
- text memory full (MEMORY FULL/ FINALIZE CD). When a CDRW has to be unfinalized for recording. Erase text for other disc(s) or finalize other disc(s) to obtain memory space
- total remaining time not sufficient, try programming tracks (see programming)

Recording is distorted
- make sure the recording level is correct

20 second pause between recordings
- see Autostart recording from external CD player (CD-SYNC)

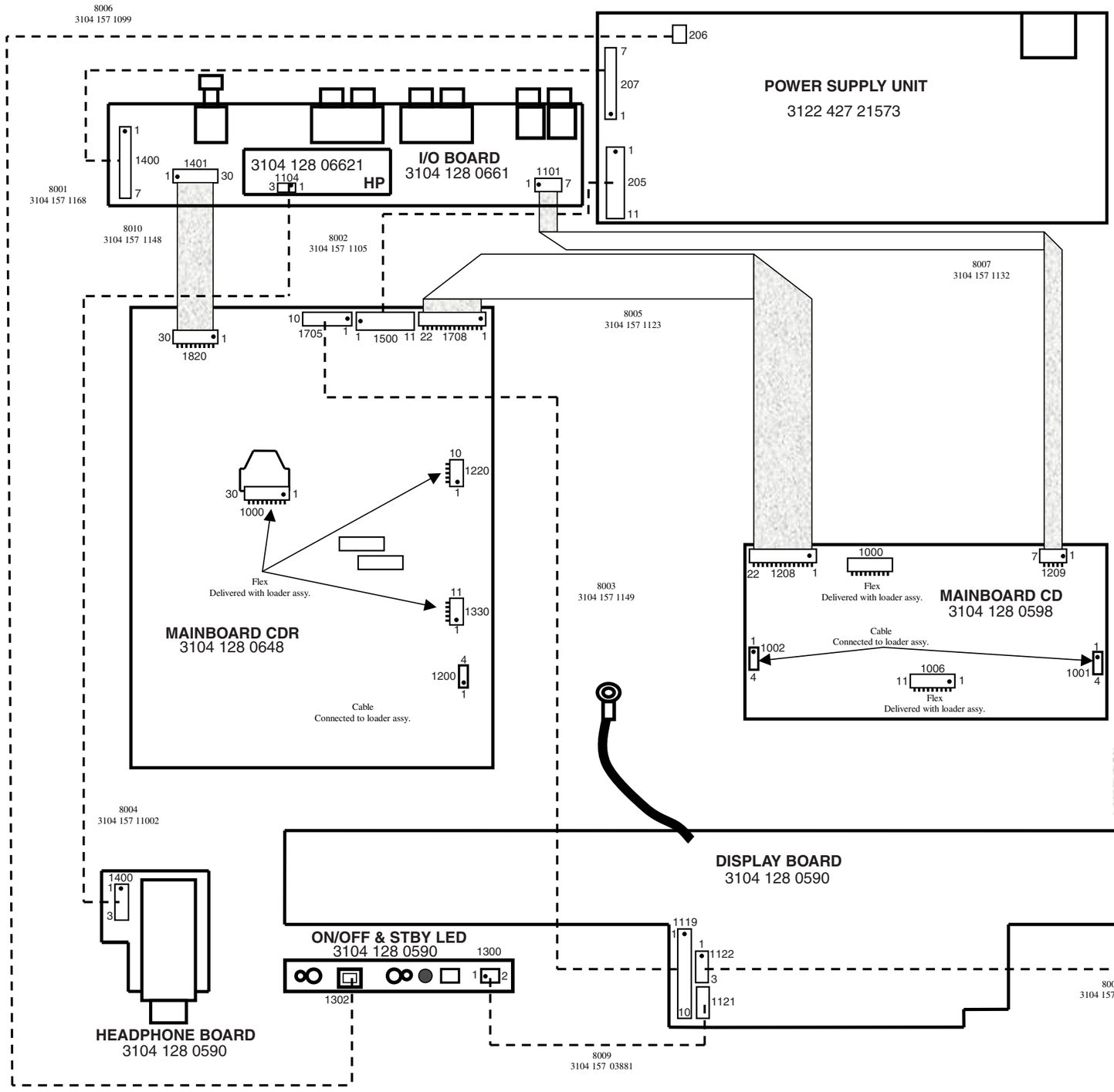
Player does not react
- switch the ON/OFF button on the front of the player off and back on

DISC RECOVER on display
- a power failure has occurred during recording, the CD recorder is attempting to repair the disc
- if DISC ERROR then appears on the display, the disc cannot be recorded further, and cannot be finalized. But it can still be played on the CD recorder or another CD recorder
- on a CDRW disc, the track being recorded is lost, but further recording and finalization can still be done

4. Mechanical instructions

Wiring diagram

WIRING DIAGRAM CDR779



Pin 1 indicated by • All Wires are 1/1.

8001

1	GROUND
2	+12V
3	GROUND
4	+5V
5	GROUND
6	-8V
7	Doesn't exist

CWAS 06EH/06EH 300 24S

8004

1	LEFT_HP_OUT
2	GROUND
3	RIGHT_HP_OUT

CWAS 03PH/03PH 440 26S

8005

1	GROUND
2	DSA_DATA_CD
3	GROUND
4	DSA_ACK_CD
5	DSA_STR_CD
6	GROUND
7	D5V
8	12V_CD
9	GROUND
10	IIS_WS_CD
11	IIS_BCLK_CD
12	GROUND
13	IIS_DATA_CD
14	GROUND
15	DOBM_CD
16	RESET_CD
17	LEFT_IN_CD
18	GROUND
19	RIGHT_IN_CD
20	KILL
21	SYS_CLK_8W
22	GROUND

CWAS FLEX 1mm 22 320 32S

8002

1	VDC2
2	VFTD
3	VDC1
4	GROUND
5	+5V
6	+5V
7	GROUND
8	GROUND
9	GROUND
10	+12V
11	-8V

CWAS 11EH/11EH 240 24S

8007

1	LEFT_CD
2	GND
3	RIGHT_CD
4	GND
5	DOBM_CD
6	GROUND
7	KILL

CWAS FLEX 1.25mm 7 300 32S

8008

1	+5V
2	IR_IN
3	GROUND

CWAS 03EH/03EH 240 24S

8009

1	LED_ON
2	GROUND

CWAS 02PH/02PH 120 26S

8003

1	VDC2
2	VFTD
3	VDC1
4	SYS_RESET
5	IIC_DATA
6	GROUND
7	IIC_CLK
8	DISPL_INT
9	GROUND
10	D5V

CWAS 10PH/10EH 440 26S

8006

1	ON!
2	OFF!

CWAS 02EH/02EH 560 26S

8010

1	GROUND
2	OPT_IN
3	DIG_OUT
4	GROUND
5	DIG_IN_2
6	DIG_IN_1
7	GROUND
8	NC.
9	KILL_MAIN
10	DEEMP
11	MUTE
12	MICPRES_INTCOPY
13	LEVEL_A2
14	LEVEL_A1
15	LEVEL_A0
16	GROUND
17	PST3
18	+5Vd
19	IIS_DATA_ADC
20	IIS_BCLK_MIC
21	GROUND
22	IIS_WS_MIC
23	IIS_DATA_DAC
24	GROUND
25	IIS_BCLK_DAC
26	IIS_WS_DAC
27	GROUND
28	MIC_HPSEL
29	CL11_MIC
30	GROUND

CWAS FLEX 0.5mm 30 130

Texture indicates text on flex

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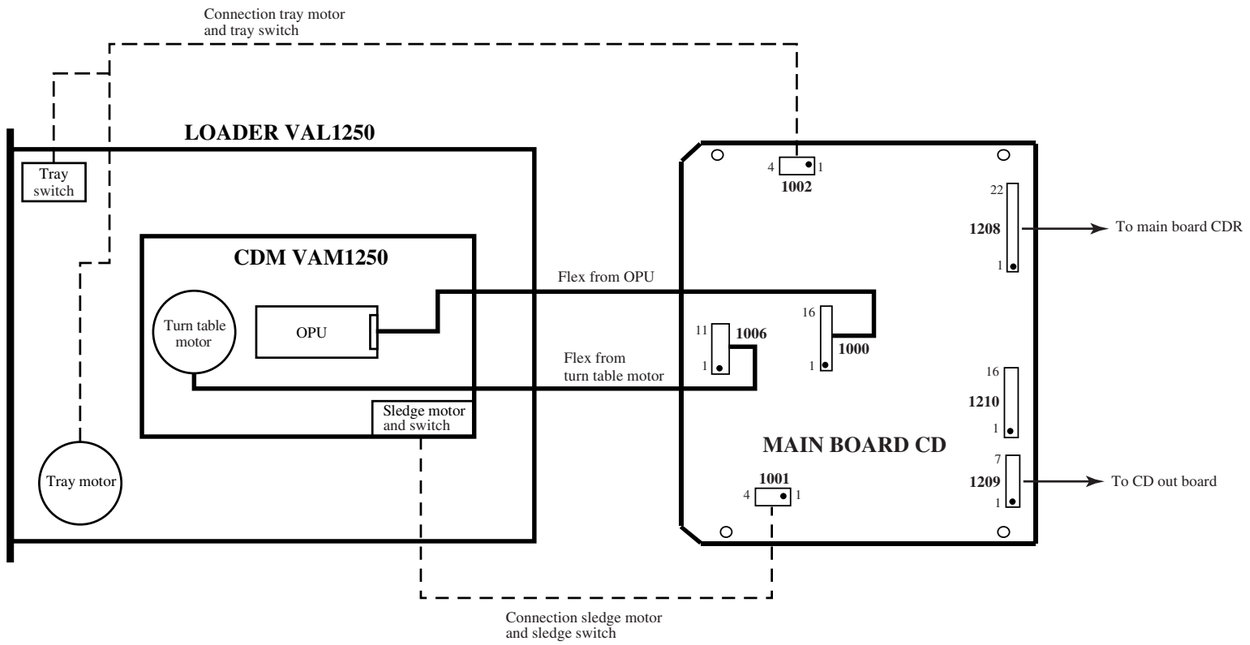
231100

Wiring CD

WIRING DIAGRAM CD LOADER VAL1250



CONNECTOR 1006

1 HALL +
2 W-
3 W+
4 V+
5 HALL-
6 U+
7 V-
8 U-
9 UCOIL
10 VCOIL
11 WCOIL

CONNECTOR 1000

1 VSUB
2 HFGND
3 VDD
4 RF
5 LDON
6 R2
7 R1
8 D4/D3
9 D2
10 D1
11 FTC
12 RW
13 FOC+
14 FOC-
15 RAD+
16 RAD-

CONNECTOR 1002

1 HOMESW
2 SGND
3 TRAY+
4 TRAY-

CONNECTOR 1001

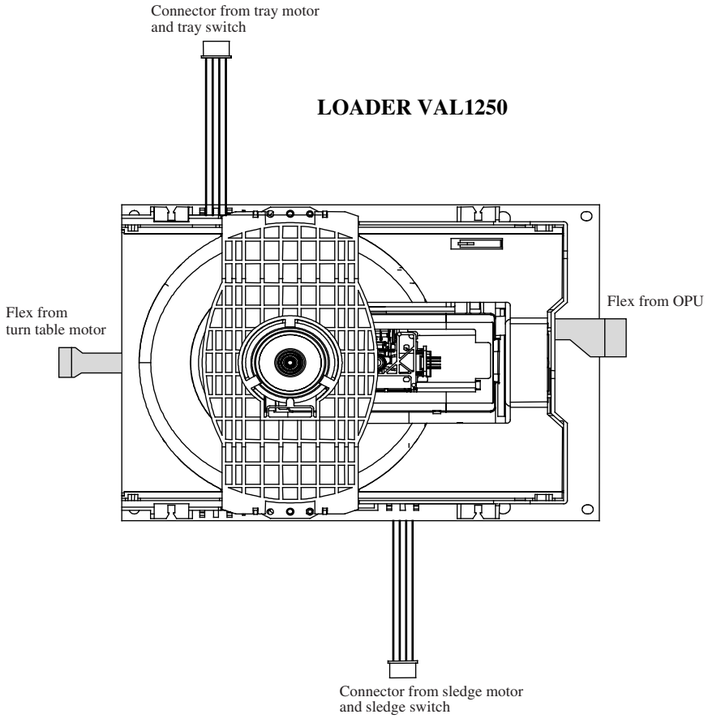
1 HOMESW
2 SGND
3 SL-
4 SL+

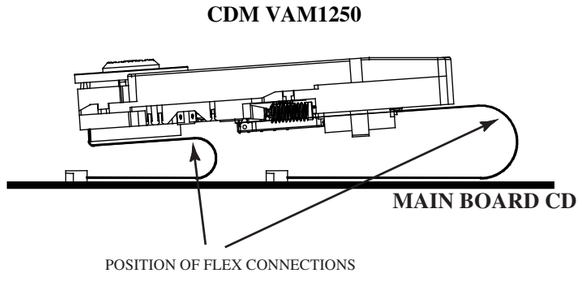
CONNECTOR 1209

1 AUDIO R (RIGHT_CD)
2 GND
3 AUDIO L (LEFT_CD)
4 GND
5 DOBM5_CD (DOBM_CD)
6 GND
7 KILL

CONNECTOR 1208

1 GND
2 CRIN (SYS_CLK_8W)
3 KILL
4 AUDIO R (RIGHT_IN_CD)
5 GND
6 AUDIO L (LEFT_IN_CD)
7 DSA_RST (SYS_RESET)
8 DOBM (DOBM_CD)
9 GND
10 SCLK (I^2S_BCLK_CD)
11 GND
12 WCLK (I^2S_WS_CD)
13 DATA (I^2S_DATA_CD)
14 GND
15 +12V
16 +5V
17 GND
18 DSA_ACK (DSA_ACK_CD)
19 DSA_STROBE (DSA_STR_CD)
20 GND
21 DSA_DATA (DSA_DATA_CD)
22 GND





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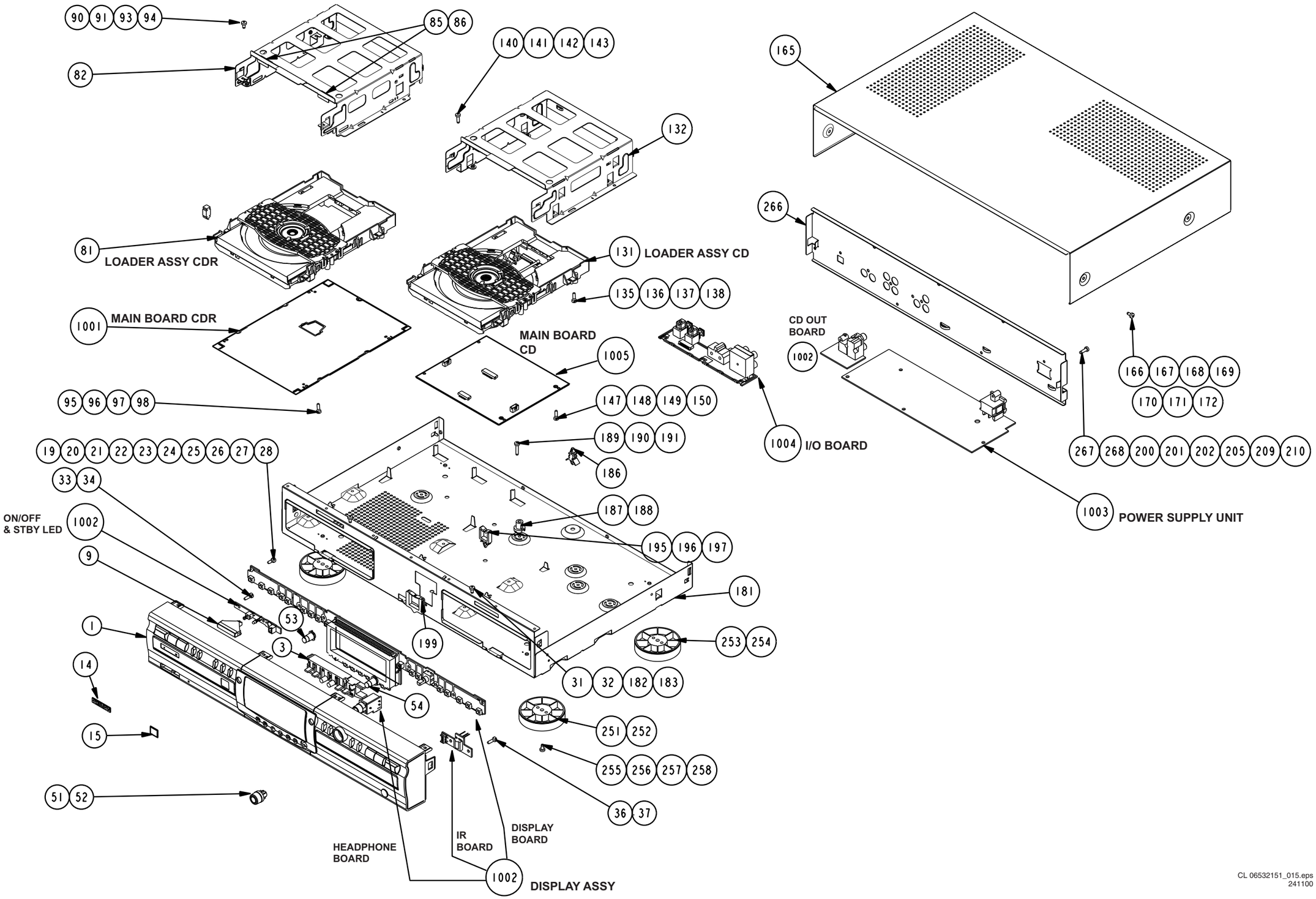
080999

Exploded view CDR779

EXPLODED VIEW CDR779



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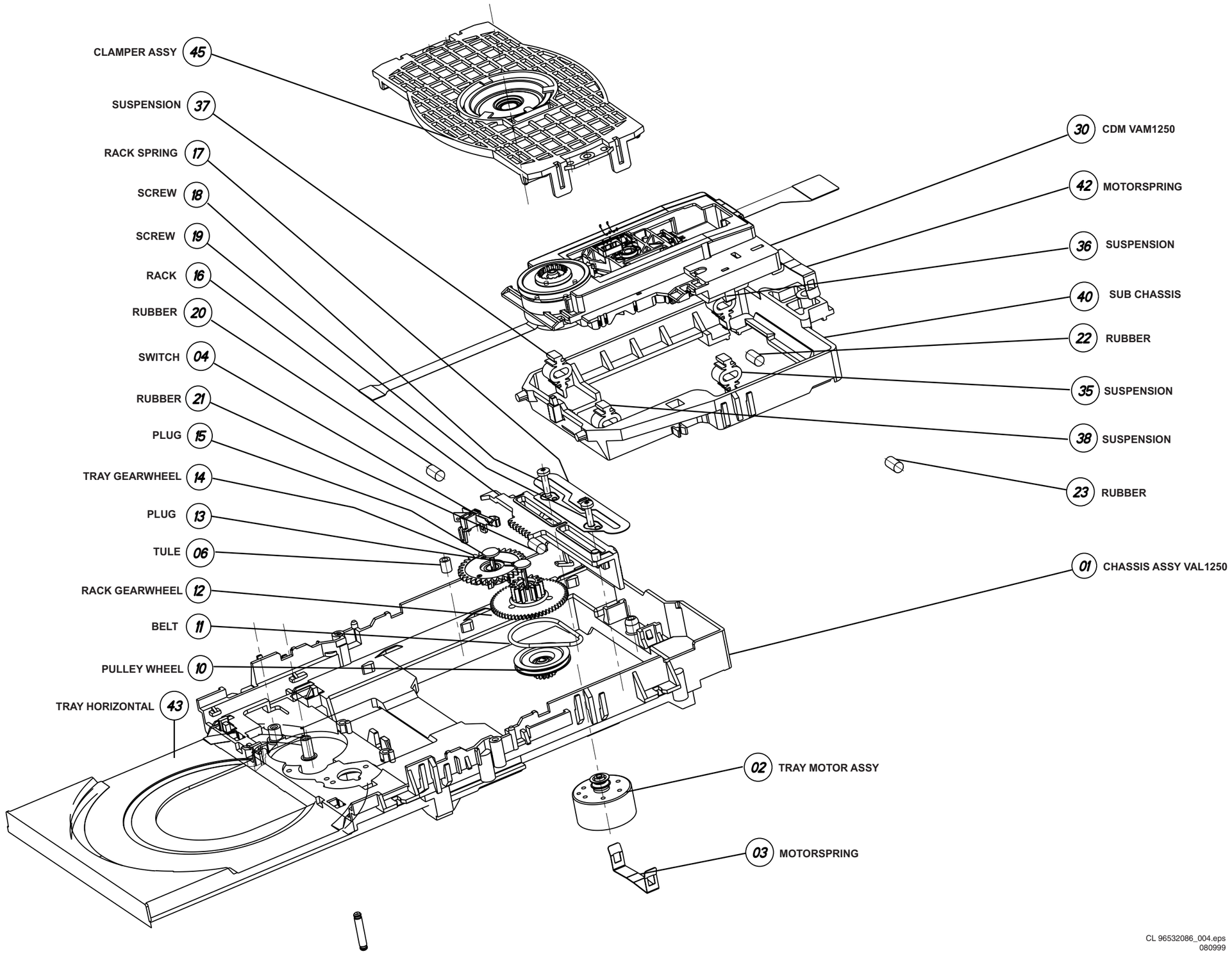
241100

Exploded view CD

EXPLODED VIEW CD LOADER VAL1250



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Dismantling 779

DISMANTLING INSTRUCTIONS CDR779

See exploded views for item numbers

Cover 165

⇒ Remove 7 screws 166 → 172, 2 at each side and 3 at rear side.

⇒ Lift cover at rear side to remove.

assembling ↑ ↓ disassembling

CDR module includes :

Loader 81
CDR main board 1001
Loader bracket 82

⇒ Put the CDR player's rear side facing you.

⇒ Undo the 3 wire connections on the CDR main board 1001.

⇒ Undo the 2 flex connections on CDR main board.

⇒ Remove 4 screws 90,91,93,94 (loader bracket 82 → frame 181).

⇒ Lift CDR module at rear side to remove.

Attention : flexes are not part of the CDR module and have to stay with CDR player in case of CDR module exchange !

CD module includes :

Loader 131
CD main board 1005
Loader bracket 132

⇒ Put the CDR player's rear side facing you.

⇒ Remove 4 screws 140 → 143 (loader bracket 132 → frame 181).

⇒ Lift CD module at rear side to remove.

⇒ Undo the 2 flex connections on CD main board.

Attention : flexes are not part of the CD module and have to stay with CDR player in case of CD module exchange !

CD main board 1005

⇒ Remove 4 screws 147 → 150 (CD main board → loader bracket 132).

⇒ Undo 2 flex and 2 wire connections on CD main board.

⇒ Remove board.

CD loader assy 131

⇒ Remove 4 screws 135 → 138 (CD loader → loader bracket 132).

⇒ Remove loader.

CDM VAM1250

⇒ Remove clamper assy 45 by releasing 4 snaps (2 on left 2 on right side) on chassis assy 1.

⇒ Open tray 43 by unlocking rack 16.

⇒ Undo wires of CDM VAM1250 from wire retainers on sub chassis 40.

⇒ Unlock suspensions 35 → 38 from sub chassis 40.

⇒ Remove CDM VAM1250.

CD out board 1002

⇒ Put CDR player's rear side facing you.

⇒ Undo flex connection to CD main board 1005.

⇒ Remove 2 screws 209, 210 connecting the 2 I/O sockets to back plate 266.

⇒ Remove board.

Attention : flex is not part of the CD out board and has to stay with CDR player in case of CD out board exchange !

I/O board 1004

⇒ Put CDR player's rear side facing you.

⇒ Undo flex connection to CDR main board 1001.

⇒ Remove 3 screws 200 → 202, connecting the 3 I/O sockets to back plate 266.

⇒ Remove board.

Attention : flex is not part of the I/O board and has to stay with CDR player in case of I/O board exchange !

Power supply unit 1003

⇒ Put the CDR player's rear side facing you.

⇒ Undo the 2 wire connections on PSU.

⇒ Remove screw 205 (mains connector → back plate 266).

⇒ Remove 3 screws 189 → 191 (PSU board → frame 181).

⇒ Unlock snap on spacer 186.

⇒ Remove PSU.

WARNING: POSSIBILITY OF HIGH VOLTAGE (300V) ON HEAT SINK, EVEN AFTER REMOUNTING OF PCB. DISCHARGE ELCAP 2121.

Front assy 1

⇒ Put the CDR player's front side facing you.

⇒ Remove 2 screws 31, 32 (ground wires → frame 181).

⇒ Remove 2 screws 182, 183 (front assy 1→ frame 181).

⇒ Unlock front assy from frame by releasing 7 snaps : start with 2 on the top and two on the sides and end with 3 at the bottom.

⇒ After disassembly put in front of the set (service position).

IR board 1002

⇒ Remove 2 screws 36 and 37 (IR board → front assy 1).

⇒ Undo wire connection on board.

⇒ Remove board.

Display board 1002

⇒ Remove easy jog knob 51 pulling it forward.

⇒ Remove 11 screws 19 → 29 (display board → front assy 1).

⇒ Release 2 snaps (1 on left and 1 on right side)

⇒ Undo the 3 wire connections on display board.

⇒ Remove display board.

Attention : when reassembling make sure the wiring from display board to IR board is positioned between FTD display and middle key assy 3 !

Headphone board 1002

⇒ Pull board out of front assy 1.

⇒ Slide board out of middle key assy 3.

⇒ Undo wire connection on board.

⇒ Remove board.

On/Off & Stby LED board 1002

⇒ Remove 2 screws 33 and 34 (on/off switch → front assy 1).

⇒ Undo the 2 wire connections on board.

⇒ Remove power button 9 from on/off switch.

⇒ Remove board.

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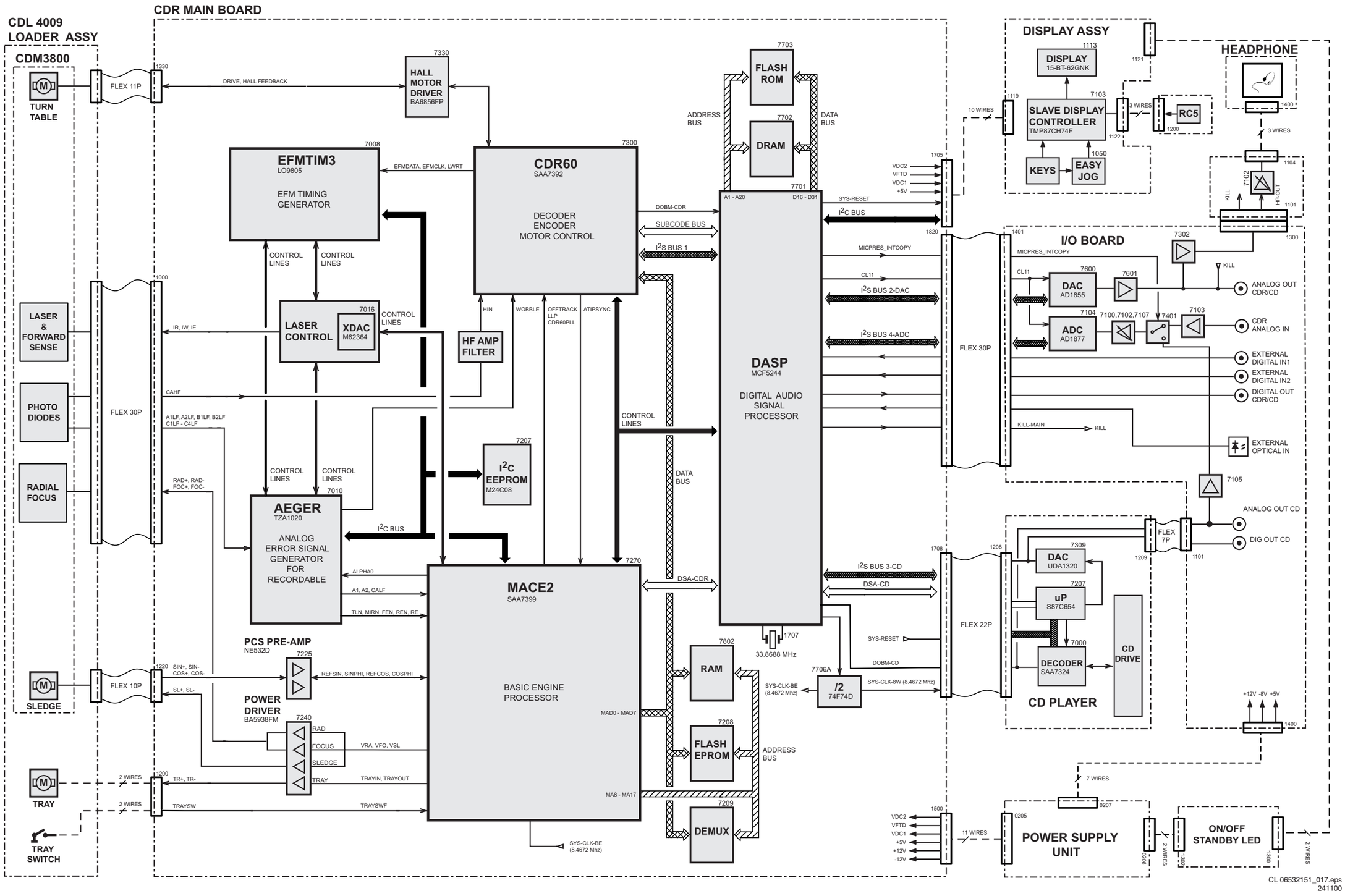
241100

5. Block diagrams, Circuit diagrams and PWB's

Blockdiagram 779

OVERALL BLOCK DIAGRAM CDR779



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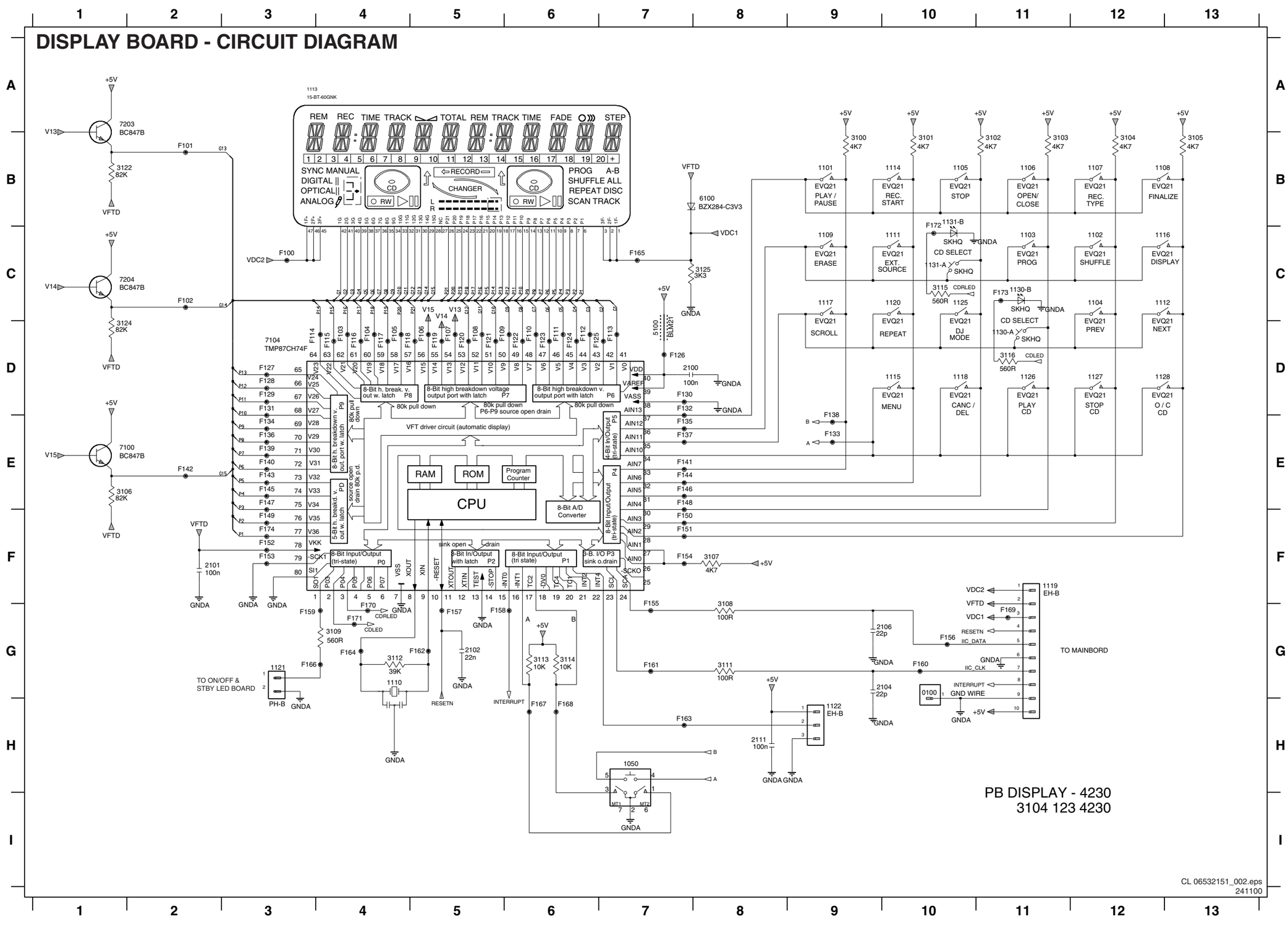
Display 779

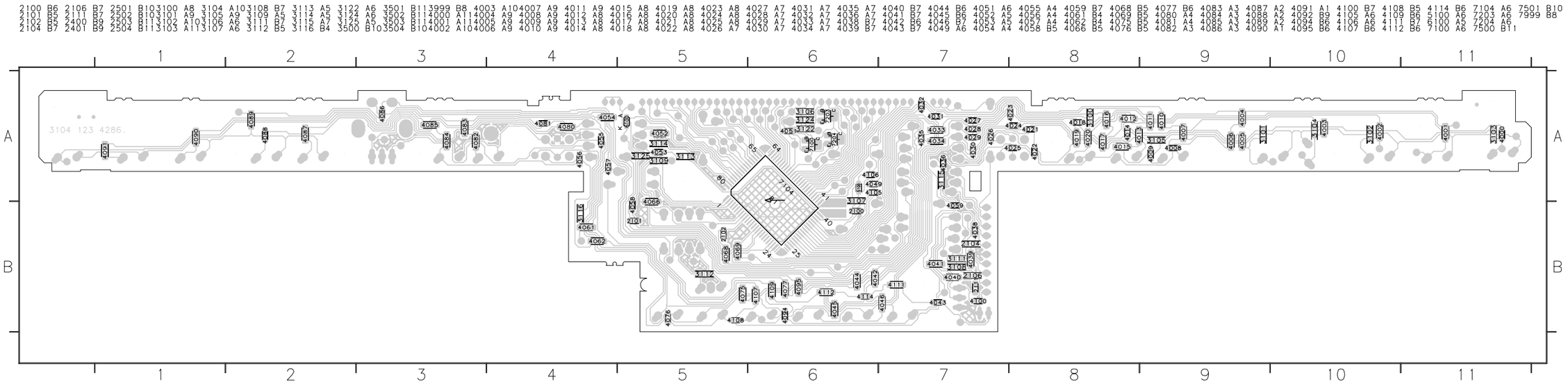
DISPLAY BOARD - CIRCUIT DIAGRAM



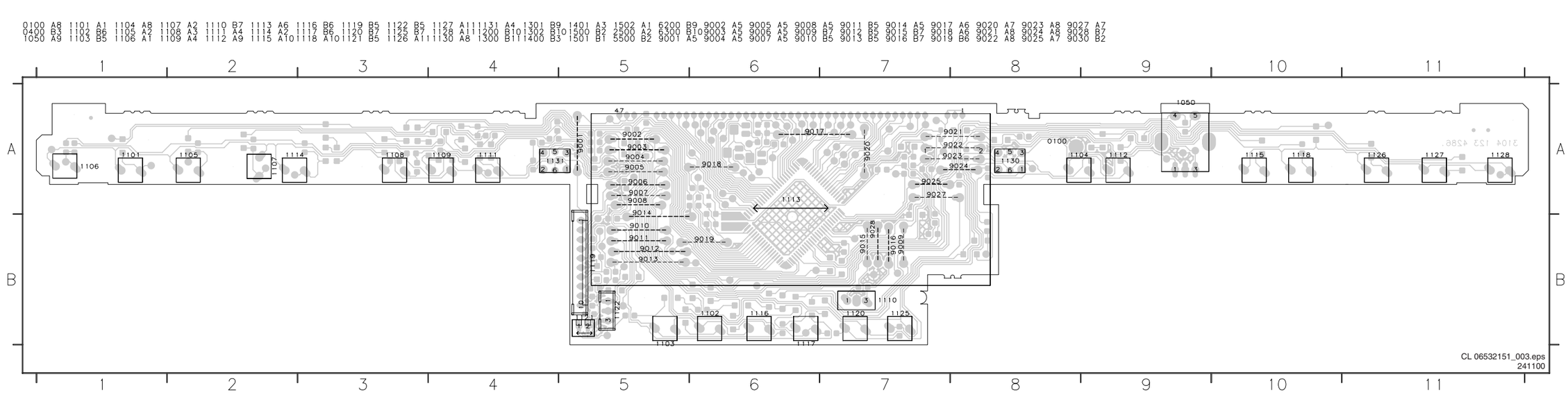
0100 G10
1050 H7
1101 B9
1102 C12
1103 C11
1104 C12
1105 B10
1106 B11
1107 B12
1108 B12
1109 C9
1110 G4
1111 C10
1112 C12
1113 A3
1114 B10
1115 D10
1116 C12
1117 C9
1118 D10
1119 F11
1120 C10
1121 G3
1122 H9
1125 C10
1126 D11
1127 D12
1128 D12
1130-A D11
1130-B C11
1131-A C10
1131-B B10
2100 D7
2101 F2
2102 G5
2104 G10
2106 G10
2111 H8
3100 B9
3101 B10
3102 B11
3103 B11
3104 B12
3105 B13
3106 E1
3107 F8
3108 G8
3109 G4
3111 G8
3112 G4
3113 G6
3114 G6
3115 C10
3116 D11
3122 B1
3124 C1
3125 C8
5100 D7
6100 B8
7100 E1
7104 D3
7203 A1
7204 C1
F100 C3
F101 B2
F102 C2
F103 D4
F104 D4
F105 D4
F106 D5
F107 D5
F108 D5
F109 D5
F110 D6
F111 D6
F112 D6
F113 D7
F114 D3
F115 D4
F116 D4
F117 D4
F118 D4
F119 D5
F120 D5
F121 D5
F122 D6
F123 D6
F124 D6
F125 D6
F126 D7
F127 D3
F128 D3
F129 D3
F130 D7
F131 D3
F132 D7
F133 E9
F134 E3
F135 E7
F136 E3
F137 E7
F138 E9
F139 E3
F140 E3
F141 E7
F142 E2
F143 E3
F144 E7
F145 E3
F146 E7
F147 E3
F148 E7
F149 F3
F150 F7
F151 F7
F152 F3
F153 F3
F154 F7
F155 G7
F156 G10
F157 G5
F158 G5
F159 G3
F160 G10
F161 G7
F162 G5
F163 H7
F164 G4
F165 C7
F166 G3
F167 H6
F168 H6
F169 G11
F170 G4
F171 G4
F172 B10
F173 C11
F174 F3

Display 779

DISPLAY BOARD - BOTTOM VIEW

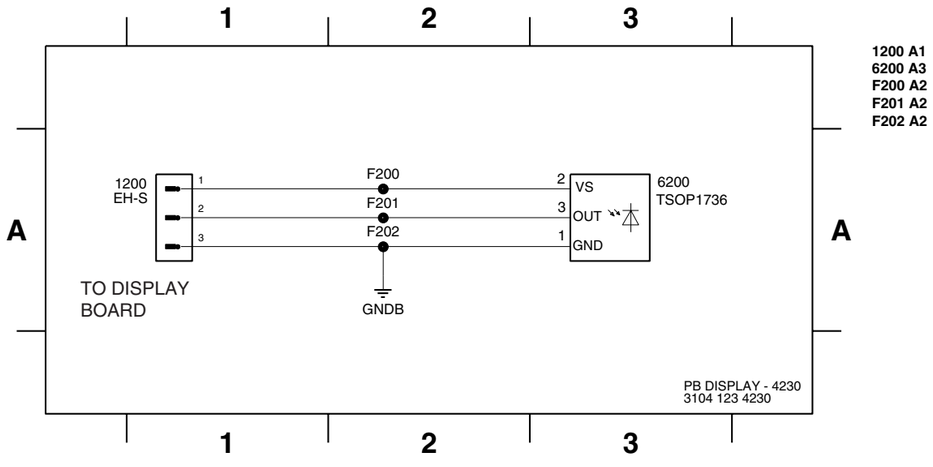


DISPLAY BOARD - TOP VIEW

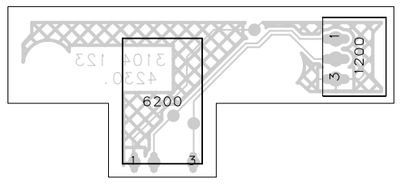


IR on/off

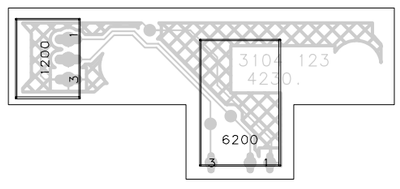
IR BOARD CDR779 - CIRCUIT DIAGRAM



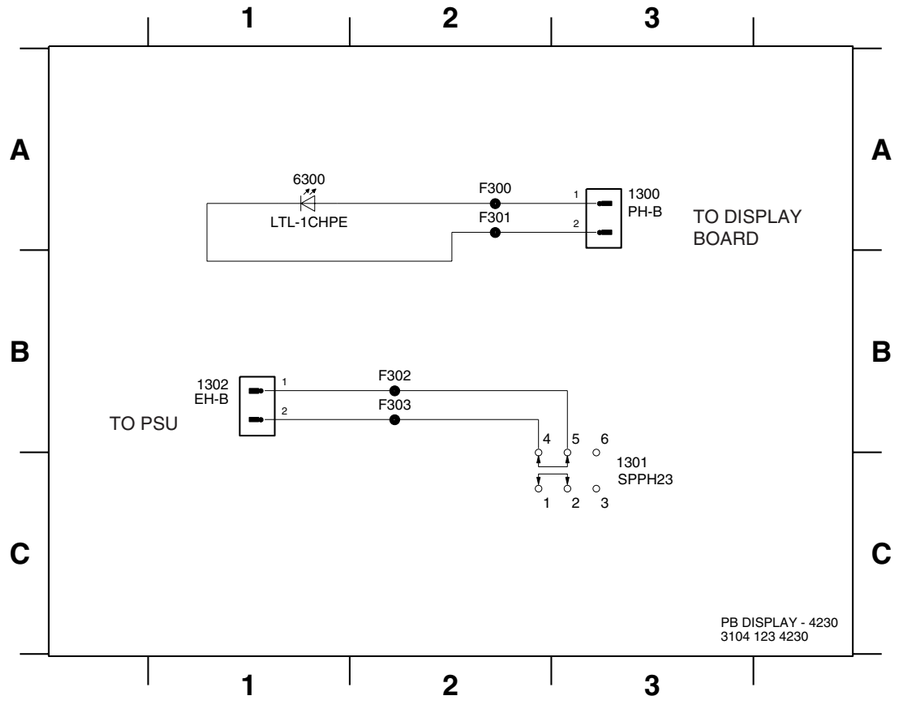
IR BOARD - FRONT VIEW



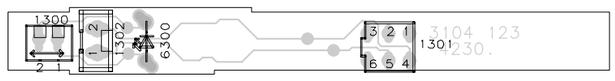
IR BOARD - BACK VIEW



ON/OFF & STBY LED BOARD CDR779 - CIRCUIT DIAGRAM



ON/OFF & STBY LED BOARD - FRONT VIEW



ON/OFF & STBY LED BOARD - BACK VIEW

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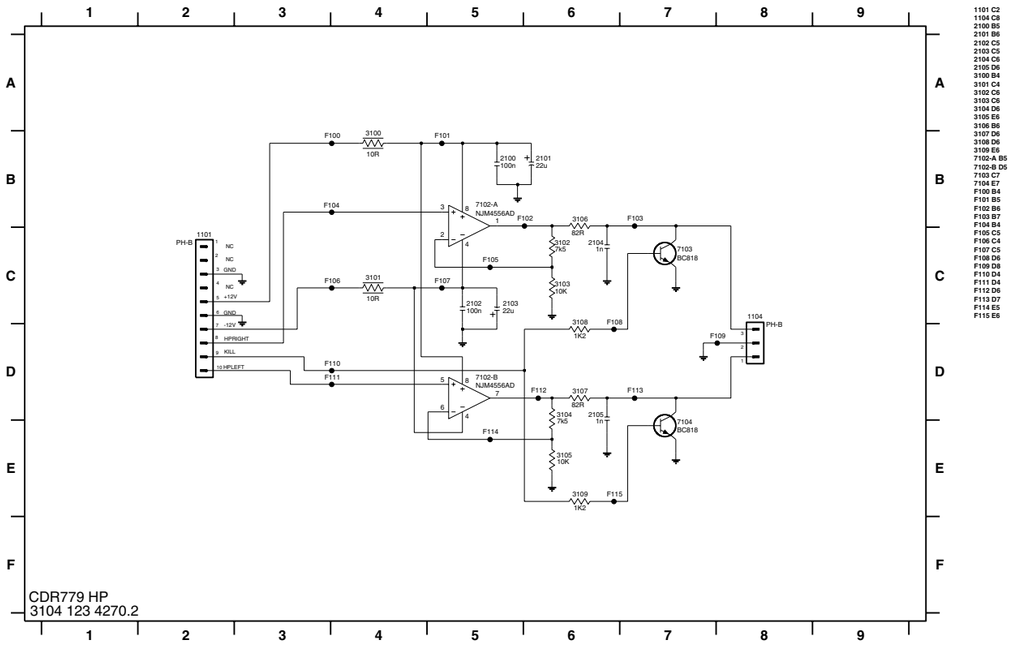
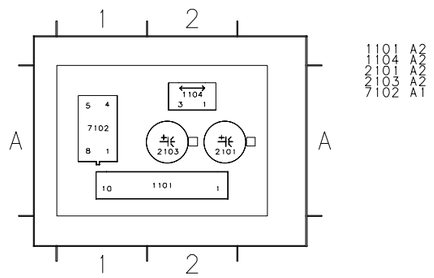
241100

HPCD out

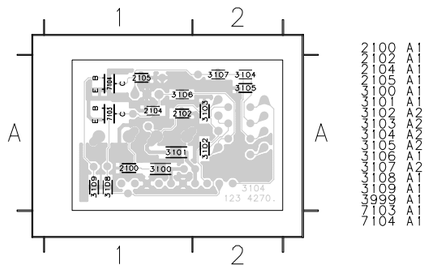
HEADPHONE BOARD - CIRCUIT DIAGRAM



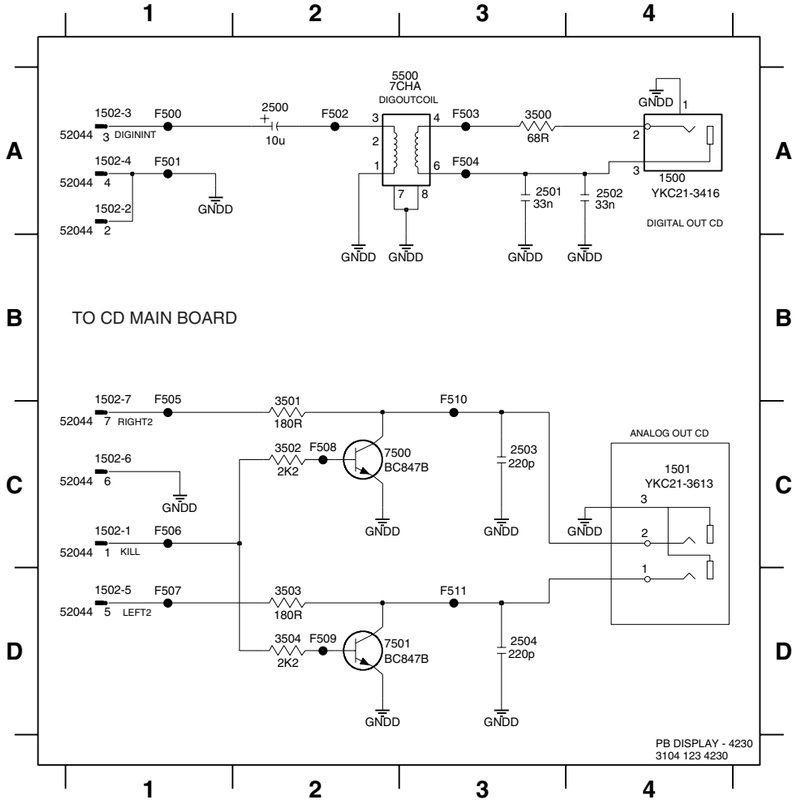
HEADPHONE BOARD - TOP VIEW



HEADPHONE BOARD - BOTTOM VIEW

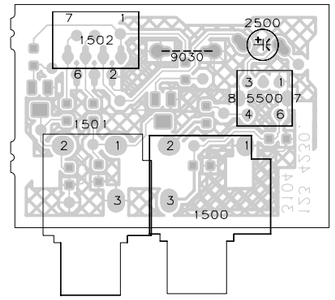


CD OUT BOARD - CIRCUIT DIAGRAM

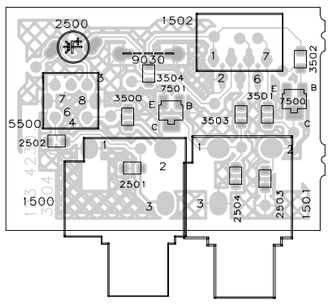


1500 A4 **3504 D2**
1501 C4 **5500 A2**
1502 A1 **7500 C2**
1502 A1 **7501 D2**
1502 A1 **F500 A1**
1502 C1 **F501 A1**
1502 C1 **F502 A2**
1502 C1 **F503 A3**
1502 D1 **F504 A3**
2500 A2 **F505 C1**
2501 A3 **F506 C1**
2502 A4 **F507 D1**
2503 C3 **F508 C2**
2504 D3 **F509 D2**
3500 A3 **F510 C3**
3501 C2 **F511 D3**
3502 C2
3503 D2

CD OUT BOARD - TOP VIEW



CD OUT BOARD - BOTTOM VIEW



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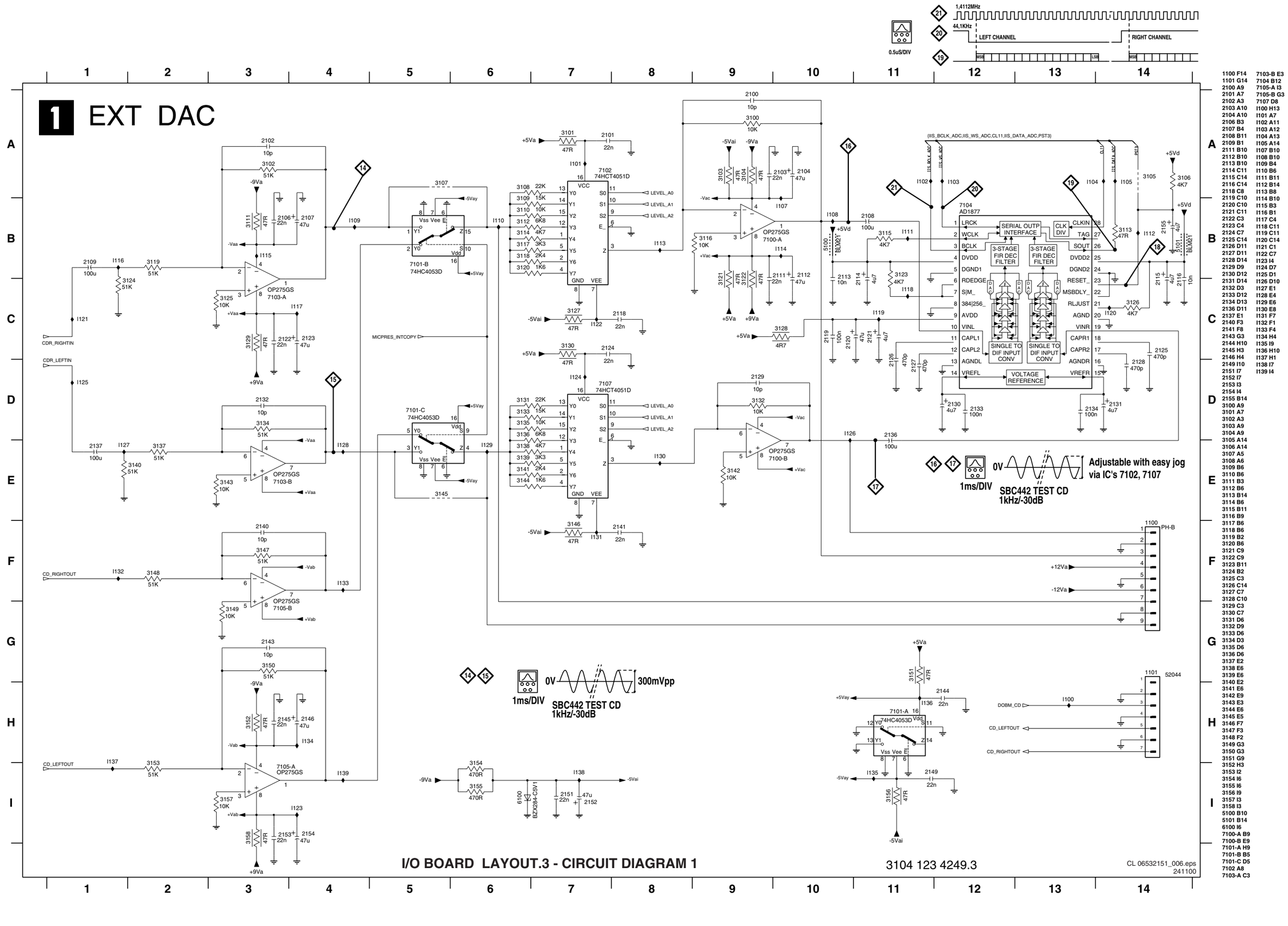
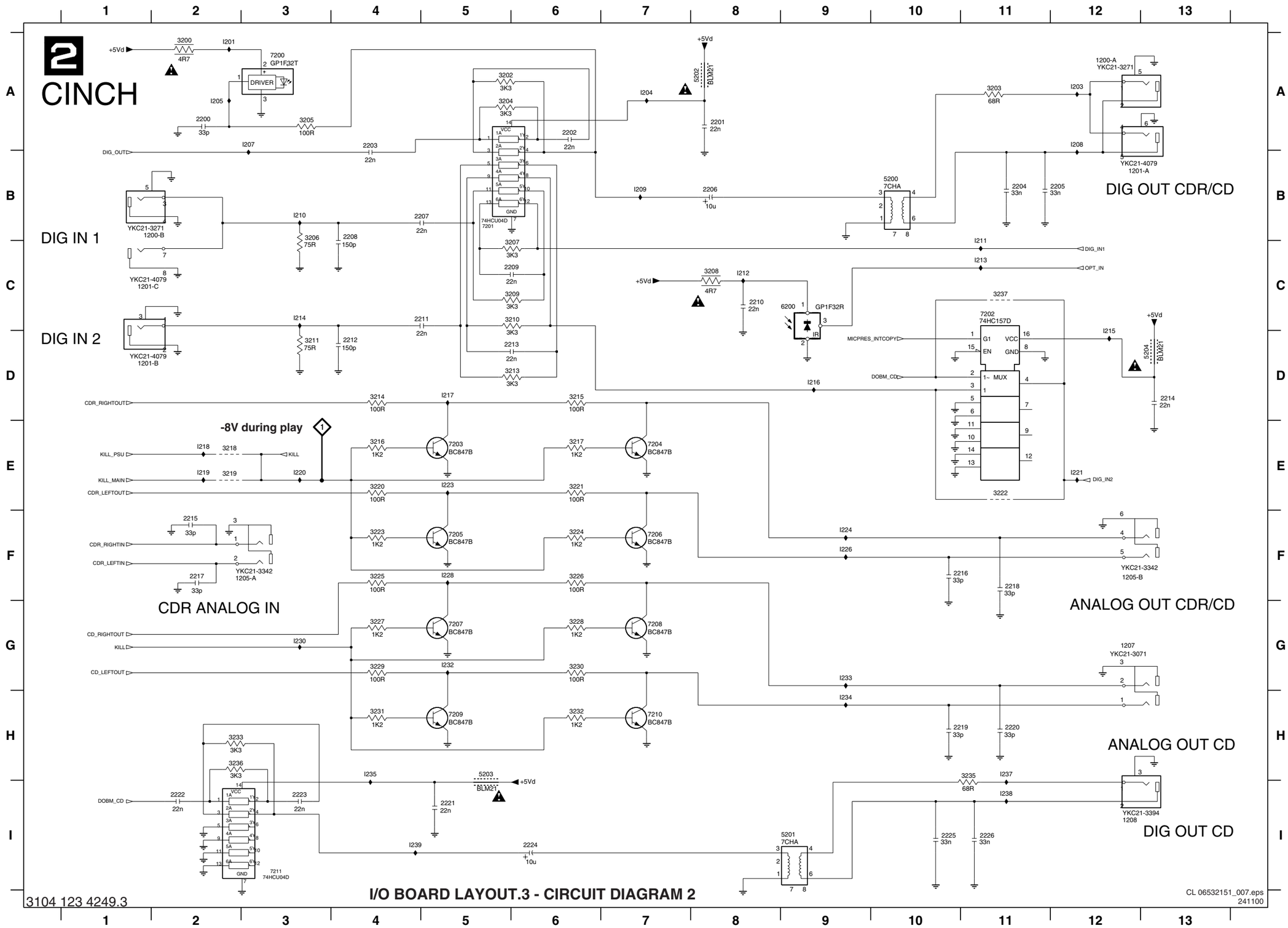
241100

I/O board: Ext DAC



1100 F14 7103-B E3
1101 G14 7104 B12
2100 A9 7105-A I3
2101 A7 7105-B G3
2102 A3 7107 D8
2103 A10 I100 H13
2104 A10 I101 A7
2106 B3 I102 A11
2107 B4 I103 A12
2108 B11 I104 A13
2109 B1 I105 A14
2111 B10 I107 B10
2112 B10 I108 B10
2113 B10 I109 B4
2114 C11 I110 B6
2115 C14 I111 B11
2116 C14 I112 B14
2118 C8 I113 B8
2119 C10 I114 B10
2120 C10 I115 B3
2121 C11 I116 B1
2122 C3 I117 C4
2123 C4 I118 C11
2124 C7 I119 C11
2125 C14 I120 C14
2126 D11 I121 C1
2127 D11 I122 C7
2128 D14 I123 I4
2129 D9 I124 D7
2130 D12 I125 D1
2131 D14 I126 D10
2132 D3 I127 E1
2133 D12 I128 E4
2134 D13 I129 E6
2136 D11 I130 E8
2137 E1 I131 F7
2140 F3 I132 F1
2141 F8 I133 F4
2143 G3 I134 H4
2144 H10 I135 I9
2145 H3 I136 H10
2146 H4 I137 H1
2149 I10 I138 I7
2151 I7 I139 I4
2152 I7
2153 I3
2154 I4
2155 B14
3100 A9
3101 A7
3102 A3
3103 A9
3104 A9
3105 A14
3106 A14
3107 A5
3108 A6
3109 B6
3110 B6
3111 B3
3112 B6
3113 B14
3114 B6
3115 B11
3116 B9
3117 B6
3118 B6
3119 B2
3120 B6
3121 C9
3122 C9
3123 B11
3124 B2
3125 C3
3126 C14
3127 C7
3128 C10
3129 C3
3130 C7
3131 D6
3132 D9
3133 D6
3134 D3
3135 D6
3136 D6
3137 E2
3138 E6
3139 E6
3140 E2
3141 E6
3142 E9
3143 E3
3144 E6
3145 E5
3146 F7
3147 F3
3148 F2
3149 G3
3150 G3
3151 G9
3152 H3
3153 I2
3154 I6
3155 I6
3156 I6
3157 I3
3158 I3
5100 B10
5101 B14
6100 I6
7100-A B9
7100-B E9
7101-A H9
7101-B B5
7101-C D5
7102 A8
7103-A C3

I/O board: Cinch



1200-A A12 I237 H11
1200-B B2 I238 I11
1201-A B12 I239 I4
1201-B D1
1201-C C1
1205-A F3
1205-B F12
1207 G12
1208 I12
2200 A2
2201 A8
2202 A6
2203 A4
2204 B11
2205 B12
2206 B8
2207 B5
2208 B4
2209 C6
2210 C8
2211 C5
2212 D4
2213 D6
2214 D13
2215 F2
2216 F11
2217 F2
2218 F11
2219 H11
2220 H11
2221 I5
2222 I2
2223 I3
2224 I6
2225 I10
2226 I11
3200 A2
3202 A5
3203 A11
3204 A5
3205 A3
3206 B3
3207 C6
3208 C8
3209 C5
3210 C6
3211 D3
3213 D6
3214 D4
3215 D6
3216 E4
3217 E6
3218 E2
3219 E2
3220 E4
3221 E6
3222 E11
3223 F4
3224 F6
3225 F4
3226 F6
3227 G4
3228 G6
3229 G4
3230 G6
3231 H4
3232 H6
3233 H2
3235 H11
3236 H2
3237 C11
5200 B10
5201 I9
5202 A8
5203 H5
5204 D13
6200 C9
7200 A3
7201 B5
7202 C11
7203 E5
7204 E7
7205 F5
7206 F7
7207 G5
7208 G7
7209 H5
7210 H7
7211 I3
I201 A2
I203 A12
I204 A7
I205 A2
I207 A3
I208 A12
I209 B7
I210 B3
I211 C11
I212 C8
I213 C11
I214 C3
I215 D12
I216 D9
I217 D5
I218 E2
I219 E2
I220 E3
I221 E12
I223 E5
I224 F9
I226 F9
I228 F5
I230 G3
I232 G5
I233 G9
I234 H9
I235 H4

I/O board: Mic ADC

MIC ADC

+3V3d
3300 47K
I301
3301 47K
22 11.2896MHz
7300 UDA1360TS
I304
CL11_MIC
SYSCLK
FSEL
PWON
CLOCK CONTROL
DECIMATION FILTER
VDDA VDDD
VREFP
VREFN
VREF
I310
2301 47u
2302 100n
2305 47u
2306 100n
MIC_LEFTIN
MIC_RIGHTIN
I308 3305 12K
I309 2304 47u
I311 3307 12K
I312 2307 47u
VINL
VINR
ADC Σ Δ
DC-CANCEL FILTER
DIGITAL INTERFACE
BCK
WS
SFOR
DATAO
VSSD VSSA
2308 1n
2325 1n
I313
I315
I316
IIS_BCLK_MIC
IIS_WS_MIC
MIC_HPSEL
(MIC_HPSEL,IIS_WS_MIC,IIS_BCLK_MIC)
23 24 25 26 27
3310 47R
I300
I302
+3V3a
+5Va
I303
3302 82R
I306
3304 47R
6300 UDZ-3.3B
3311 1R
2309 47u
2310 100n
2311 47u
2312 100n
3314 100R
6301 UDZ-3.3B
+5Vd
0V
1ms/DIV
SBC442 TEST CD 1kHz/-30dB
Adjustable with pot 3109 on headphone & mic board
3313 47R
+5Vax
7301-A 74HC4053D
I318 2313 22n
Vdd
Vss Vee E
Y0 Y1 Z S11 S10
-5Vax
I317
2316 22n
3317 47R
-5Vai
3318
7301-B 74HC4053D
I322
CDR_RIGHTOUT
CD_RIGHTOUT
MIC_HPSEL
CD_LEFTOUT
CDR_LEFTOUT
7301-C 74HC4053D
I325
3321
-Vad
+Vad
OP275GS 7302-B
I320
3323 1K
I323
2321 1n
HP_RIGHTOUT
+9Va
-9Va
3320 47R
I326
2317 22n
2318 47u
7302-A OP275GS
I327
3324 1K
I324
2322 1n
HP_LEFTOUT
I328
3322 47R
2319 22n
2320 47u

HP_LEFTOUT
KILL
HP_RIGHTOUT
-9Va
+9Va
MIC_RIGHTIN
MIC_LEFTIN
MICPRES_INTCOPY
1300 PH-B
2300 100p
2326 100n
2327 100n
TO HEADPHONE & MIC BOARD

0.5uS/DIV
26 1,4112MHz
25 44,1KHz
27
LEFT CHANNEL
RIGHT CHANNEL
MSB
LSB

HP SELECT

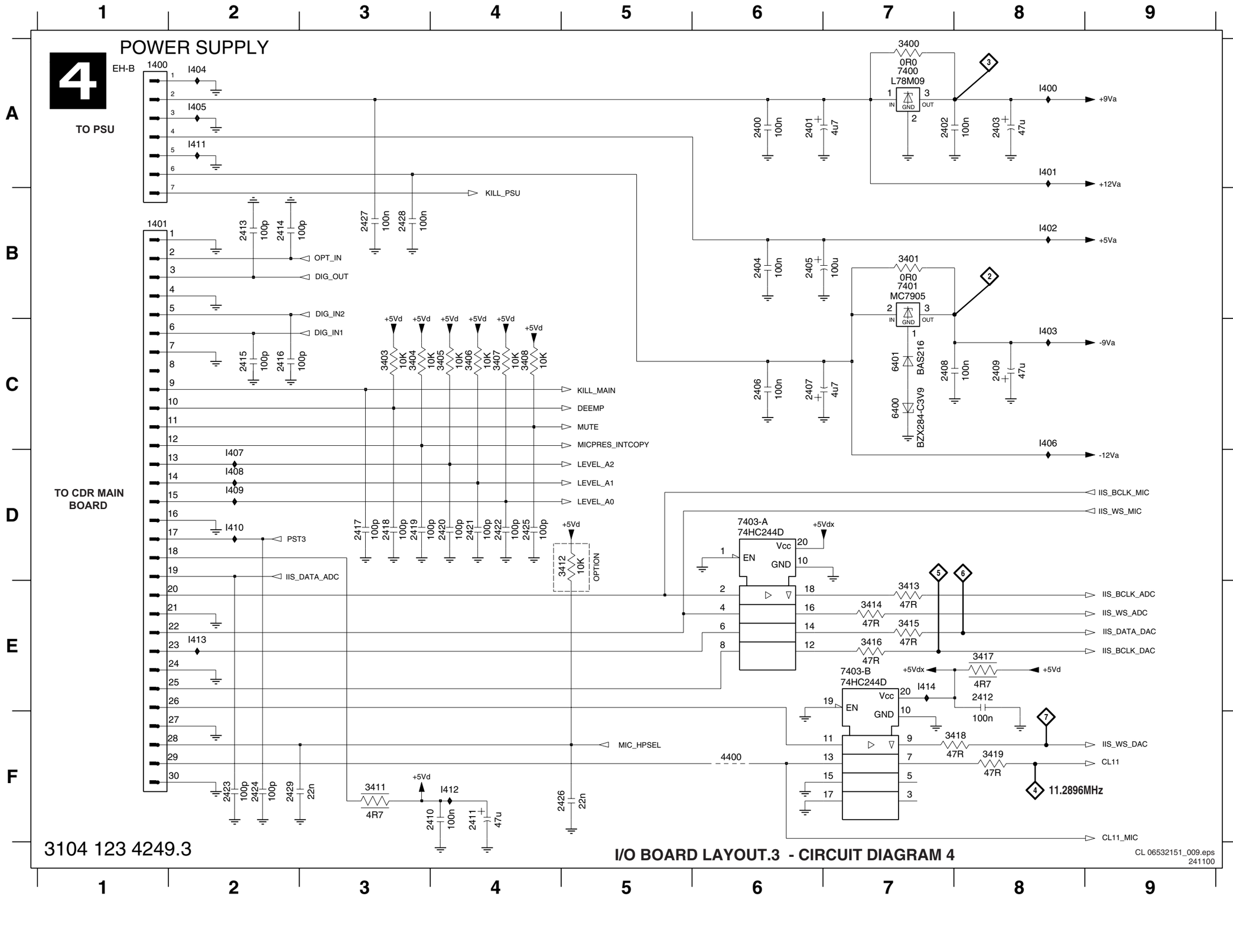
3104 123 4249.3

I/O BOARD LATOUT.3 - CIRCUIT DIAGRAM

CL 06532151_008.eps
241100

1300 B13
2300 C12
2301 B6
2302 B6
2304 B3
2305 B6
2306 B6
2307 B3
2308 C2
2309 C7
2310 C8
2311 D6
2312 D6
2313 D5
2316 E5
2317 H10
2318 H10
2319 I10
2320 I10
2321 F12
2322 I12
2325 C3
2326 C13
2327 C13
3300 A3
3301 A3
3302 A8
3304 A8
3305 B3
3307 B3
3310 C6
3311 C8
3313 D4
3314 D8
3317 E4
3318 F6
3320 H9
3321 H6
3322 I9
3323 F12
3324 H12
6300 B8
6301 D7
7300 A4
7301-A D4
7301-B G6
7301-C G6
7302-A H9
7302-B F9
I300 A6
I301 A3
I302 A6
I303 A8
I304 A4
I306 A7
I308 B3
I309 B3
I310 B6
I311 B2
I312 B3
I313 B4
I315 C4
I316 C4
I317 E4
I318 D5
I320 F11
I322 F7
I323 F13
I324 H13
I325 H7
I326 H10
I327 H11
I328 H10

I/O board: Power supply



1400 A1
1401 B1
2400 A6
2401 A6
2402 A7
2403 A8
2404 B6
2405 B6
2406 C6
2407 C6
2408 C7
2409 C8
2410 F4
2411 F4
2412 E8
2413 B2
2414 B2
2415 C2
2416 C2
2417 D3
2418 D3
2419 D3
2420 D4
2421 D4
2422 D4
2423 F2
2424 F2
2425 D4
2426 F5
2427 B3
2428 B3
2429 F2
3400 A7
3401 B7
3403 C3
3404 C3
3405 C4
3406 C4
3407 C4
3408 C4
3411 F3
3412 D5
3413 E7
3414 E7
3415 E7
3416 E7
3417 E8
3418 F8
3419 F8
4400 F6
6400 C7
6401 C7
7400 A7
7401 B7
7403-A D6
7403-B E7
I400 A8
I401 A8
I402 B8
I403 C8
I404 A2
I405 A2
I406 C8
I407 D2
I408 D2
I409 D2
I410 D2
I411 A2
I412 F4
I413 E2
I414 E7

I/O board: DAC filter

5 DAC FILTER_L

I/O BOARD LAYOUT.3 - CIRCUIT DIAGRAM 5

DAC FILTER_R

FILTER_L
FILTER_R
CDR_LEFTOUT
CDR_RIGHTOUT
+9Va
-9Va
OPTION
1ms/DIV
0V
320mVpp
SBC442 TEST CD
1kHz/-30dB

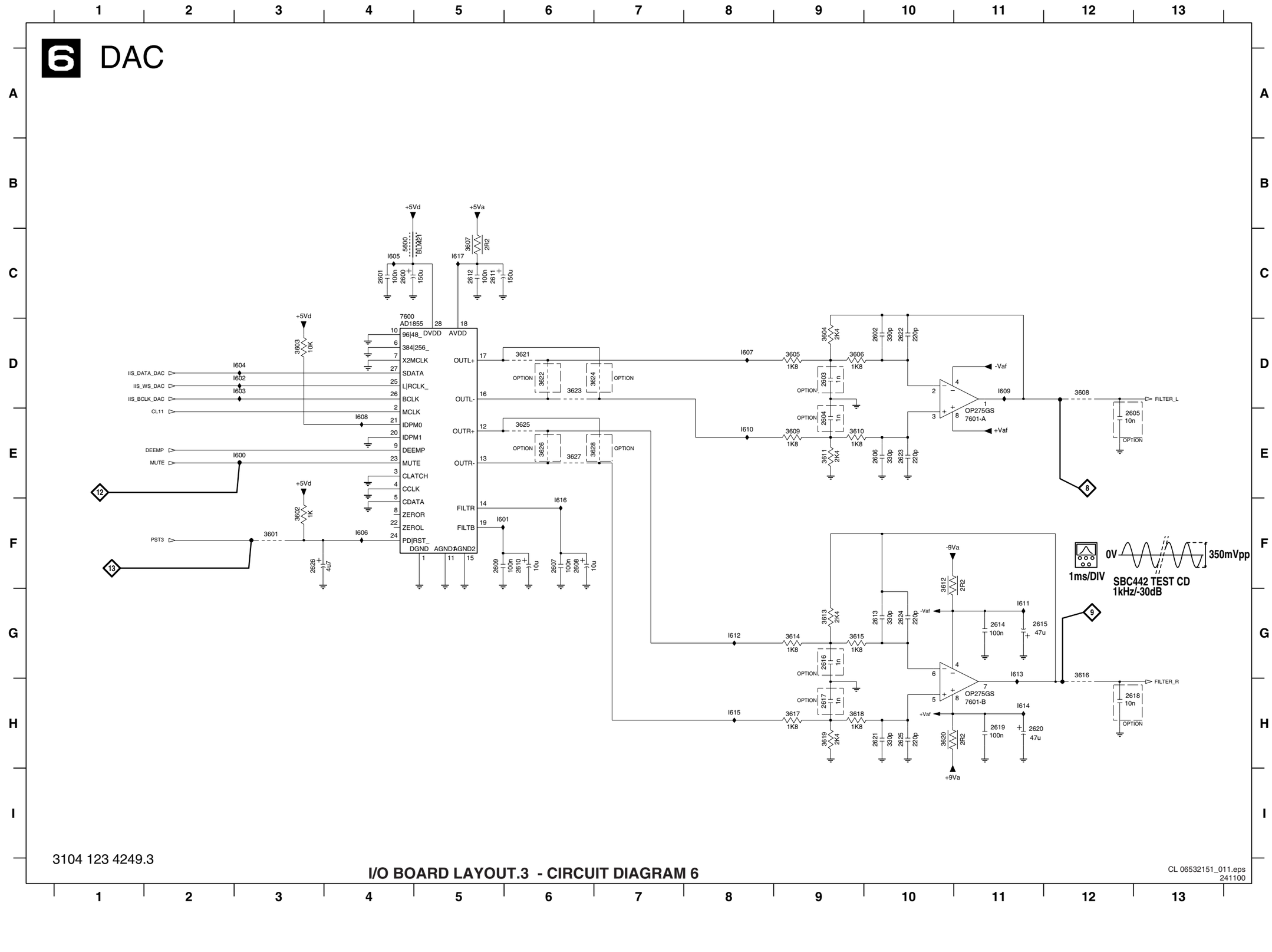
3104 123 4249.3

CL 06532151_010.eps
241100

2500 A4
2501 A10
2502 A10
2503 B8
2504 C12
2506 C8
2507 D10
2508 D10
2509 E4
2510 E4
2511 E10
2512 E10
2513 G8
2514 G12
2516 H8
2517 I10
2518 I10
2519 I4
2520 C3
2521 H3
2522 B8
2523 C8
2524 G8
2525 H8
2526 B5
2527 B6
2528 C5
2529 C6
2530 G5
2531 G6
2532 H5
2533 H6
2534 A9
2535 D9
2536 F9
2537 I9
3500 A11
3501 A5
3502 A6
3503 A8
3504 B5
3505 B8
3506 B9
3507 B10
3508 B2
3511 C8
3512 C13
3513 C10
3516 C4
3517 D6
3518 D5
3519 E8
3520 E11
3521 E7
3522 E11
3523 E5
3524 E6
3525 E8
3526 G5
3527 G8
3528 G9
3529 G10
3530 G2
3533 H8
3534 H13
3535 H10
3538 H4
3539 I6
3540 I5
3541 I8
3542 I11
3543 I7
3545 A7
3546 E7
3547 E7
3548 I7
3549 E7
3550 I7
6500 B5
6501 A9
6502 B5
6503 A9
6504 A9
6505 B7
6506 C7
6507 C7
6508 D9
6509 C5
6510 D9
6511 D9
6512 C5
6513 G5
6514 F9
6515 G5
6516 F9
6517 F9
6518 G7
6519 G7
6520 H7
6521 H9
6522 H5
6523 I9
6524 I9
6525 H5
7500 A8
7501 A4
7502 B7
7503 B10
7505 C10
7507 C7
7508 D4
7509 D8
7510 F8
7511 F4
7512 G7
7513 G10
7515 H10
7517 H7
7518 H4
7519 I8
7520 A7
7521 D7
7522 F7
7523 I7
I500 A7
I501 A12
I503 A5
I504 A8
I507 B9
I509 B8
I513 B2
I514 B3
I515 B11
I516 B12
I523 C8
I524 C9
I529 D5
I531 D8
I532 E7
I535 E7
I537 F5
I538 F8
I541 G9
I543 G8
I547 G2
I548 G3
I549 G11
I550 G12
I557 H8
I558 H9
I563 I5
I565 I8
I566 I7

I/O board: DAC

6 DAC



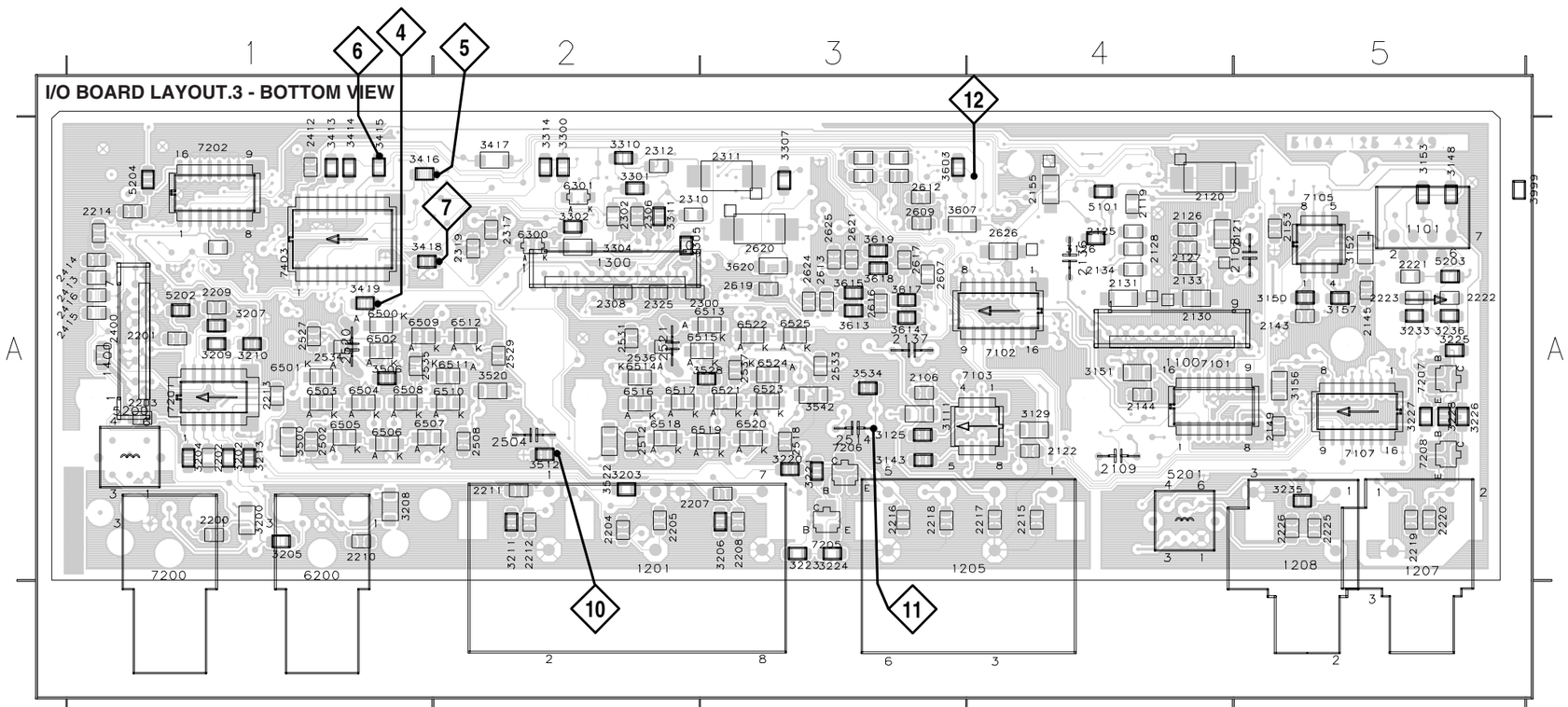
2600 C4
2601 C4
2602 D10
2603 D9
2604 E9
2605 E12
2606 E10
2607 F6
2608 F6
2609 F5
2610 F6
2611 C5
2612 C5
2613 G10
2614 G11
2615 G11
2616 G9
2617 H9
2618 H12
2619 H11
2620 H11
2621 H10
2622 D10
2623 E10
2624 G10
2625 H10
2626 F3
3601 F3
3602 F3
3603 D3
3604 D9
3605 D9
3606 D9
3607 C5
3608 D12
3609 E9
3610 E9
3611 E9
3612 F10
3613 G9
3614 G9
3615 G9
3616 G12
3617 H9
3618 H9
3619 H9
3620 H10
3621 D6
3622 D6
3623 D6
3624 D7
3625 E6
3626 E6
3627 E6
3628 E7
5600 C4
7600 D4
7601-A E11
7601-B H11
I600 E3
I601 F5
I602 D3
I603 D3
I604 D3
I605 C4
I606 F4
I607 D8
I608 E4
I609 D11
I610 E8
I611 G11
I612 G8
I613 G11
I614 H11
I615 H8
I616 F6
I617 C5

3104 123 4249.3

I/O BOARD LAYOUT.3 - CIRCUIT DIAGRAM 6

CL 06532151_011.eps
241100

Layout I/O board



2106 A3 2308 A2 3156 A5 3522 A2 6523 A3
2119 A4 2310 A2 3157 A5 3528 A3 6524 A3
2120 A4 2311 A3 3200 A1 3534 A3 6525 A3
2121 A4 2312 A2 3202 A1 3542 A3 7101 A4
2122 A4 2317 A2 3203 A2 3603 A3 7102 A4
2125 A4 2319 A2 3204 A1 3607 A3 7103 A4
2126 A4 2325 A2 3205 A1 3613 A3 7105 A5
2127 A4 2400 A1 3206 A3 3614 A3 7107 A5
2128 A4 2412 A1 3207 A1 3615 A3 7201 A1
2130 A4 2413 A1 3208 A1 3617 A3 7202 A1
2131 A4 2414 A1 3209 A1 3618 A3 7205 A3
2133 A4 2415 A1 3210 A1 3619 A3 7206 A3
2134 A4 2416 A1 3211 A2 3620 A3 7207 A5
2143 A5 2502 A1 3213 A1 3621 A3 7208 A5
2144 A4 2508 A2 3220 A3 3622 A3 7403 A1
2145 A5 2512 A4 3221 A3 3623 A3
2149 A5 2518 A3 3222 A1 3624 A3
2153 A5 2527 A1 3223 A3 3999 A5
2155 A4 2529 A2 3224 A3 5101 A4
2200 A1 2531 A2 3225 A5 5202 A1
2201 A1 2533 A3 3226 A5 5203 A5
2202 A1 2534 A1 3227 A5 5204 A1
2203 A1 2535 A1 3228 A5 6500 A2
2204 A2 2536 A2 3233 A5 6501 A2
2205 A2 2537 A3 3235 A5 6502 A1
2207 A3 2607 A3 3236 A5 6503 A1
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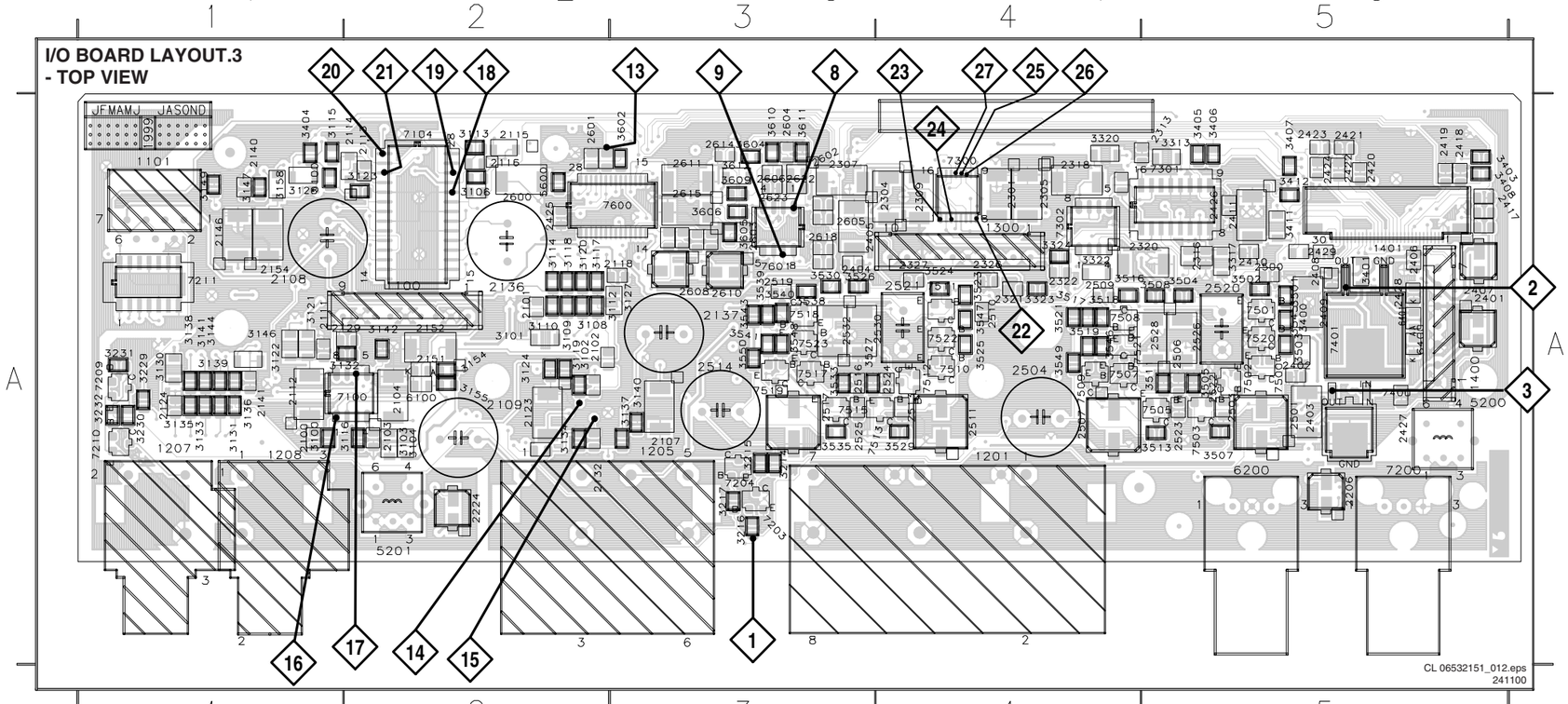

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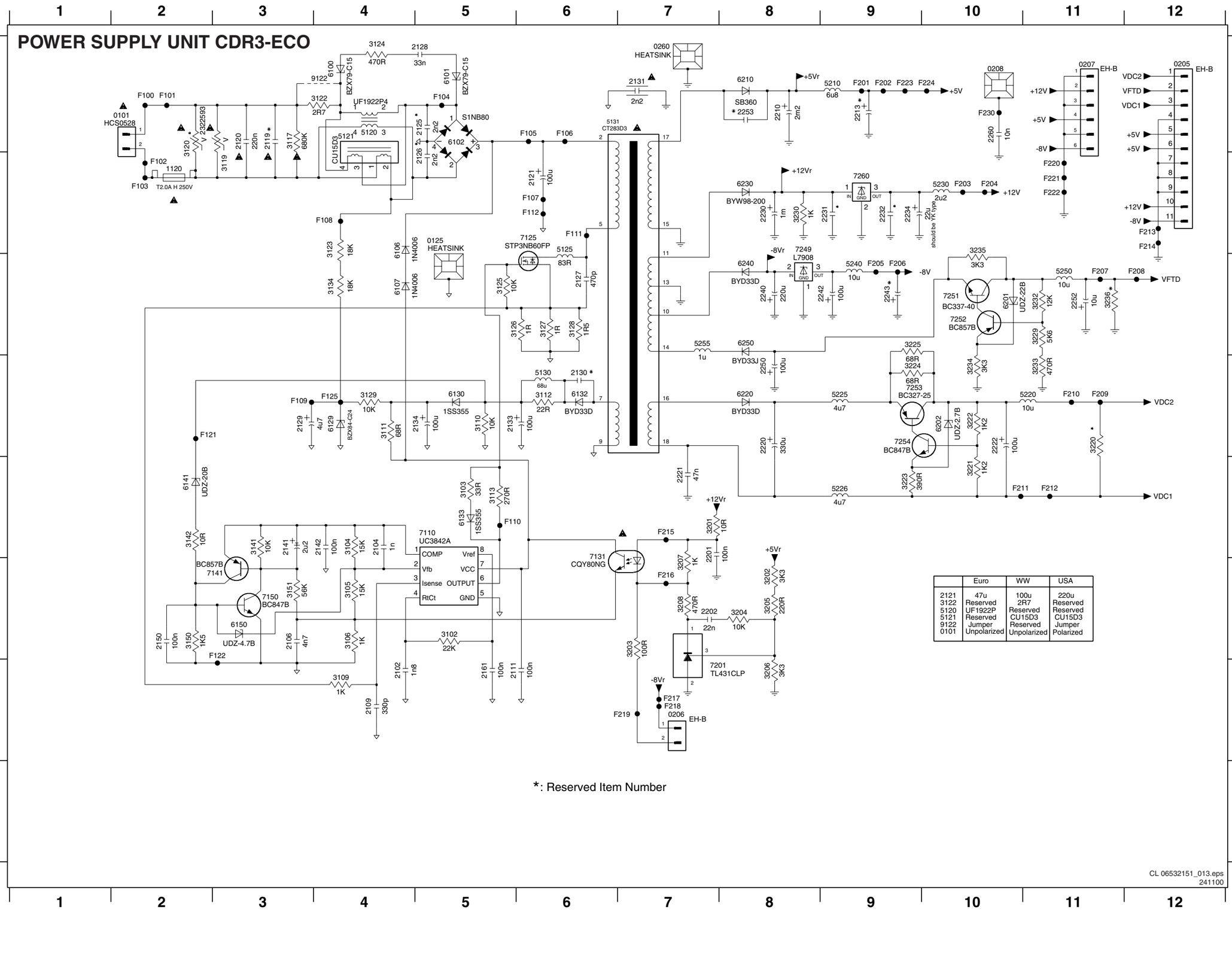
PSU CDR3-ECU

POWER SUPPLY UNIT CDR3-ECO



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2121	47u	100u	220u
3122	Reserved	2R7	Reserved
5120	UF1922P	Reserved	Reserved
5121	Reserved	CU15D3	CU15D3
9122	Jumper	Reserved	Jumper
0101	Unpolarized	Unpolarized	Polarized

*: Reserved Item Number

CL 06532151_013.eps
241100

0101 A2
0125 B5
0205 A12
0206 G7
0207 A11
0208 A10
0260 A7
1120 B2
2102 G4
2104 E4
2106 F3
2109 G4
2111 G5
2119 A3
2120 A3
2121 B6
2125 A5
2126 B5
2127 C6
2128 A5
2129 D3
2130 D6
2131 A7
2133 D5
2134 D5
2141 E3
2142 E4
2150 F2
2161 G5
2201 E7
2202 F7
2210 A8
2213 A9
2220 D8
2221 E7
2222 D10
2230 B8
2231 B9
2232 B9
2234 B9
2240 C8
2242 C9
2243 C9
2250 D8
2252 C11
2253 A8
2260 A10
3102 F5
3103 E5
3104 E4
3105 F4
3106 F4
3109 G4
3110 D5
3111 D4
3112 D6
3113 E5
3117 A3
3119 B3
3120 A2
3122 A4
3123 B4
3124 A4
3125 C5
3126 C6
3127 C6
3128 C6
3129 D4
3134 C4
3141 E3
3142 E2
3150 F2
3151 F3
3201 E7
3202 F8
3203 F7
3204 F8
3205 F8
3206 G8
3207 F7
3208 F7
3220 D11
3221 E10
3222 D10
3223 E9
3224 D9
3225 C9
3229 C11
3230 B8
3232 C11
3233 D11
3234 D10
3235 B10
3236 C11
5120 A4
5121 A4
5125 B6
5130 D6
5131 A6
5210 A9
5220 D11
5225 D9
5226 E9
5230 B10
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5250 C11
5255 C7
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6101 A5
6102 A5
6106 B4
6107 C4
6129 D4
6130 D5
6132 D6
6133 E5
6141 E2
6150 F3
6201 C10
6202 D10
6210 A8
6220 D8
6230 B8
6240 C8
6250 C8
7110 E5
7125 B6
7131 F6
7141 F3
7150 F3
7201 G7
7249 B8
7251 C10
7252 C10
7253 D9
7254 D9
7260 B9
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F101 A2
F102 B2
F103 B2
F104 A5
F105 A6
F106 A6
F107 B6
F108 B4
F109 D3
F110 E5
F111 B6
F112 B6
F121 D2
F122 F3
F125 D4
F201 A9
F202 A9
F203 B10
F204 B10
F205 C9
F206 C9
F207 C11
F208 C12
F209 D11
F210 D11
F211 E10
F212 E11
F213 B12
F214 B12
F215 E7
F216 F7
F217 G7
F218 G7
F219 G7
F220 B11
F221 B11
F222 B11
F223 A9
F224 A10
F230 A10

Layout PSU CDR3-ECO

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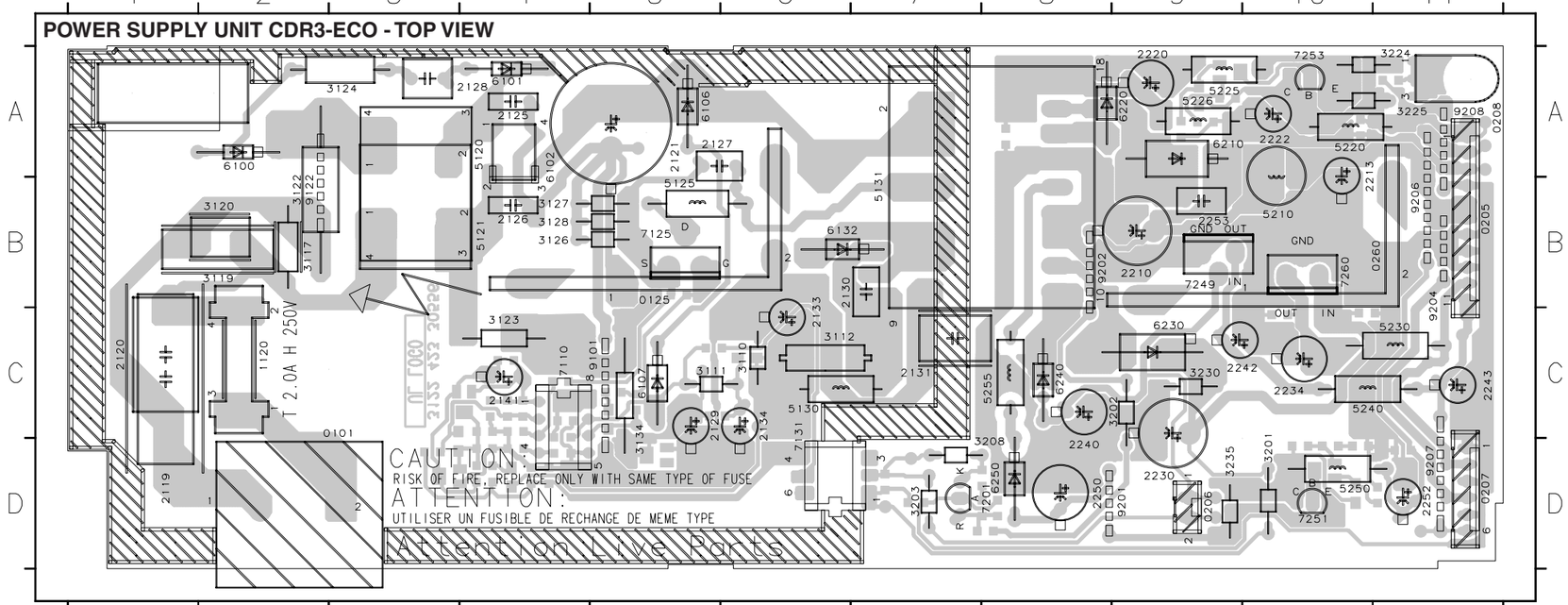

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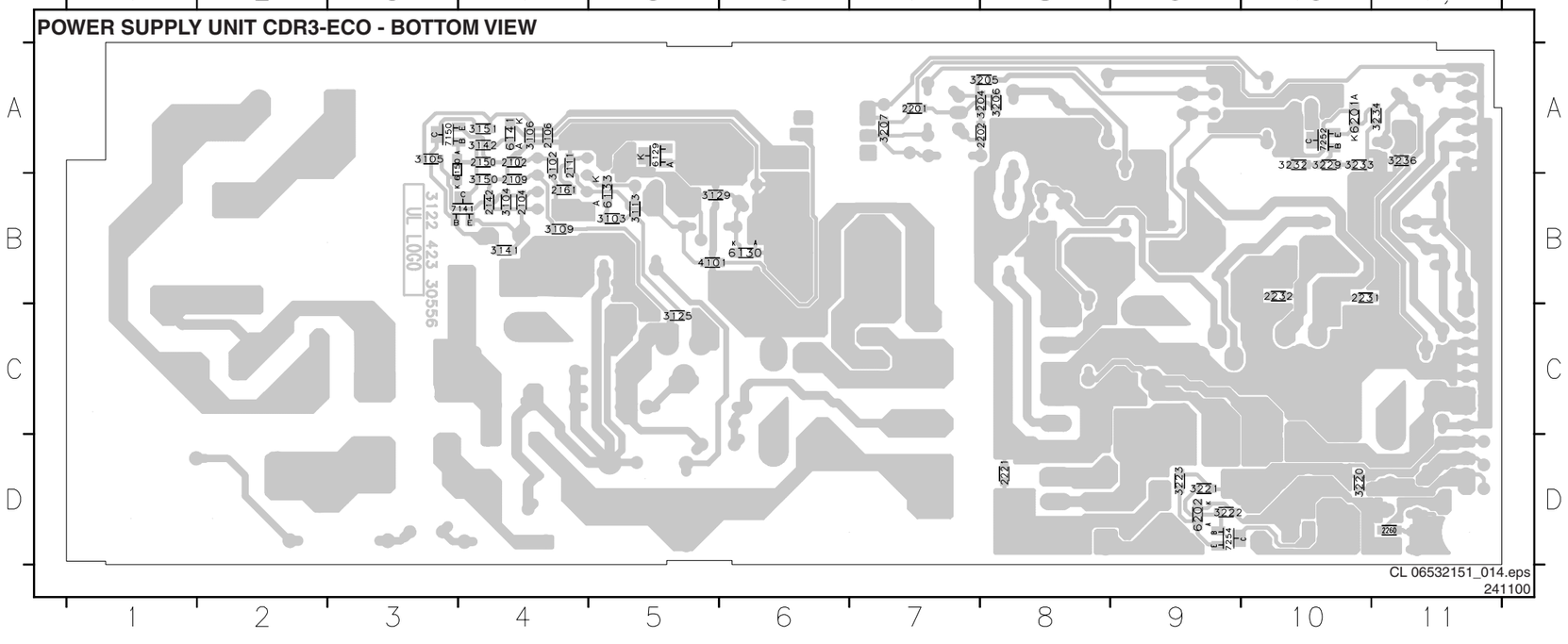

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241100

CD main board: Decoder & servo processor part

1000-1 C1	1000-7 H1	1020 G10				2148 C1	2159 D1	2169 F8	2183 F3	2232 H13	3164 B15	3178 C8	3187 D2	3196 E6	3205 E7	3219-C G13	3269 H14	3282 G11	7006 D3	7130 H15	F151 C13	F164 D7	F174 E7	F190 H14	F309 C9	F321 G12
1000-10 G1	1000-8 H1	1021 G10	2130 B6	2139 B11		2149 C6	2160 D6	2170 F8	2184 G9	2233 H13	3168 B12	3179 C1	3188 D5	3197 E8	3206 E8	3219-D G13	3270 H15	3283 G12	7007 E7	7131 H14	F154 C1	F165 D13	F175 E7	F191 H11	F310 C9	F322 G12
1000-11 G1	1000-9 H1	1022 G11	2131 B12	2140 C4		2150 C9	2161 D6	2171 F9	2185 G9	2236 F6	3169 B5	3180 C5	3189 D7	3198 E2	3208 F1	3220 G11	3273 B11	3284 D13	7008 E2	7132 H13	F155 C2	F166 E7	F177 F1	F192 H14	F311 D13	F324 G10
1000-12 D1	1003 F7	1023 G11	2132 B11	2141 C6		2151 D3	2162 E4	2172 F9	2186 G10	2280 F14	3171 B13	3181 C9	3190 D9	3199 E3	3211 F6	3225 H10	3274 B12	3285 H13	7009 D5	7311-A G2	F156 C8	F167 E14	F178 F9	F302 B12	F312 D9	
1000-2 E1	1004 G9	1028 B2	2133 B1	2142 C9		2152 D3	2163 E1	2173 F9	2189 G9	2285 G10	3172 B11	3182 D2	3191 D4	3200 E8	3212 F9	3229 H9	3275 B12	3286 H13	7010 E6	7139 A12	F157 C3	F168 E14	F180 G1	F303 B11	F313 D7	
1000-3 B1	1009 C15	1029 B3	2134 B1	2143 C4		2154 D9	2164 E4	2174 F1	2201 H4	2286 G11	3173 B4	3183 D2	3192 D4	3201 E2	3213 F3	3265 H15	3276 B11	3287 H13	7011 E2	7143 A13	F159 C9	F170 E1	F181 F13	F304 B11	F314 D9	
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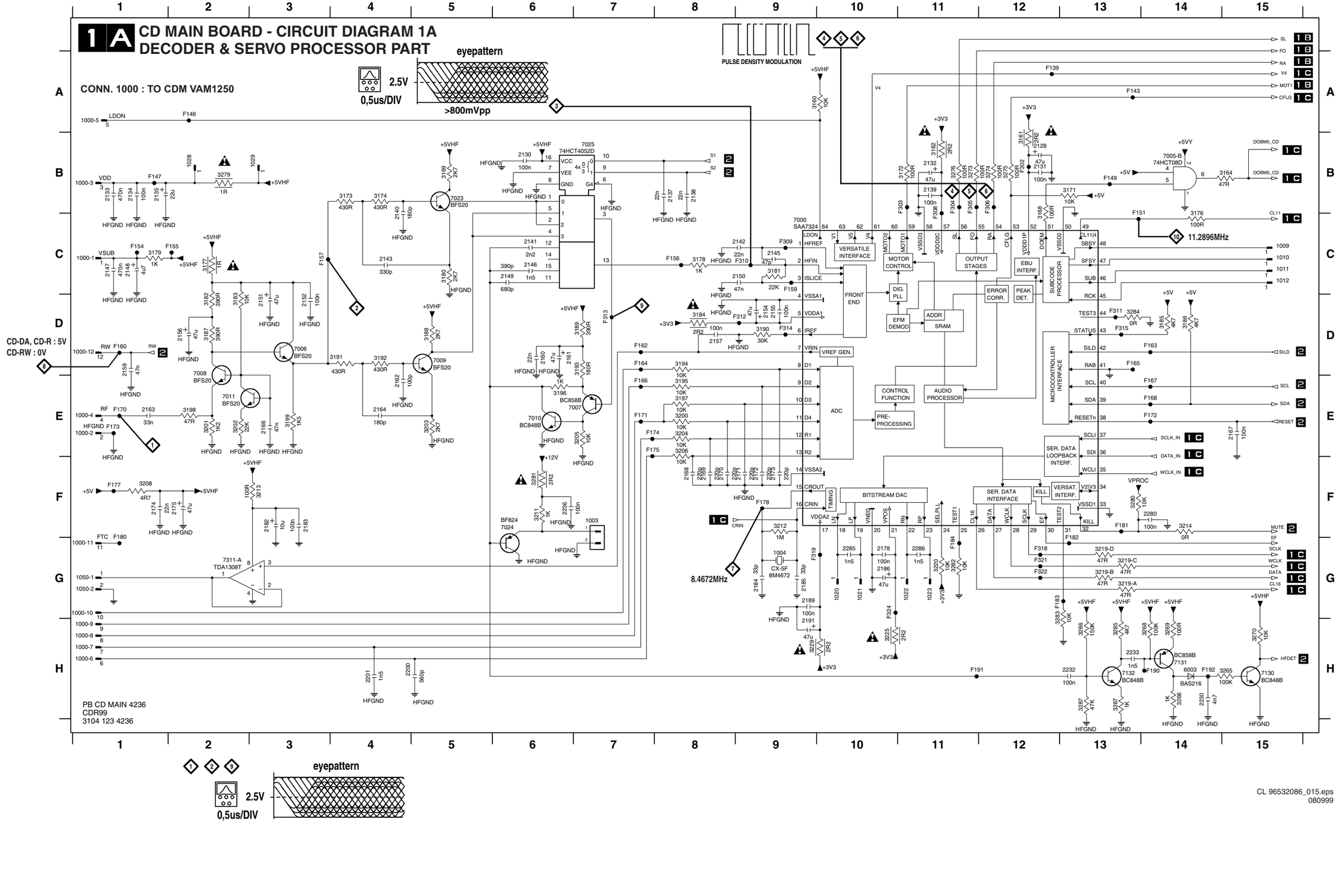
1000-5 A1	1011 C15	1050-2 G1	2137 B8	2146 C6		2156 D2	2167 E14	2178 G10	2201 H4	3161 B12	3176 C14	3185 D14	3194 D8	3203 E5	3219-A G13	3267 H13	3280 F13	7000 C9	7024 F6	7147 B1	F162 D7	F172 E14	F183 G12	F306 B12	F318 G12	
1000-6 H1	1012 C15	1128 B12	2138 B8	2147 C1		2157 D8	2168 F8	2182 F3	2230 H14	3162 B11	3177 C2	3186 D14	3195 E8	3204 E8	3219-B G13	3268 H14	3281 F6	7005-B H14	7025 B7	7149 B13	F163 D14	F173 E1	F184 G11	F308 B11	F319 G9	



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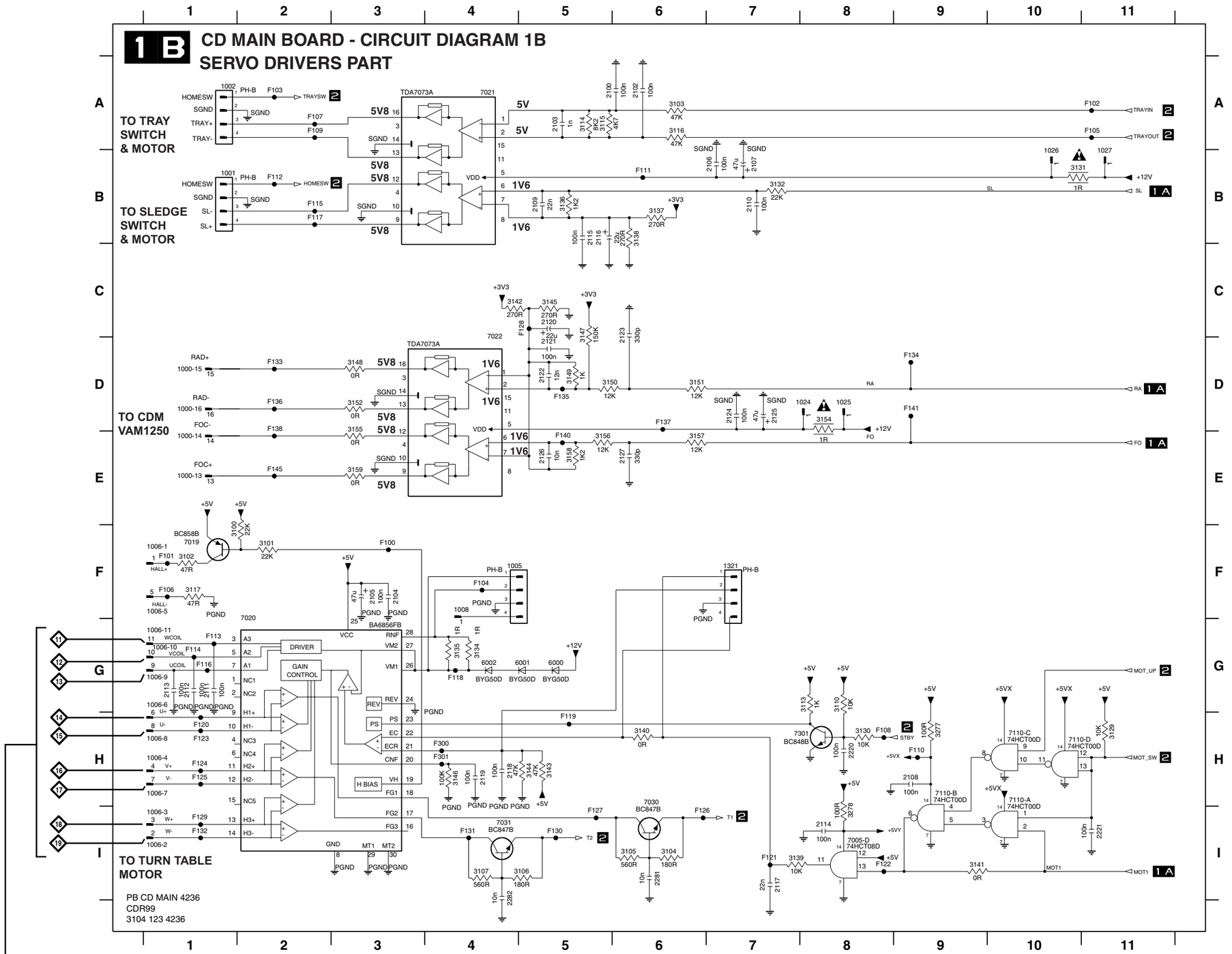
CD main board: Servo drivers part



Input conditions conn 1006 pin						Outputs conn 1006			Test points on driver		
6	8	4	7	3	2	9	10	11	18	17	16
U+	U-	V+	V-	W+	W-	UCOIL	VCOIL	WCOIL	HALL_U	HALL_V	HALL_W
L	M	H	M	M	M	6V	0V	0V	0V	5V	
H	M	L	M	M	M	0V	6V	6V	5V	0V	
M	M	L	M	H	M	0V	6V	0V		0V	5V
M	M	H	M	L	M	6V	0V	6V		5V	0V
H	M	M	M	L	M	0V	0V	6V	5V		0V
L	M	M	M	H	M	6V	6V	0V	0V		5V

Input voltage	Level	Tolerance	Unit
H	2.8	0.1	V
M	2.5	0.1	V
L	2.2	0.1	V

1000-13 E1
1000-14 E1
1000-15 D1
1000-16 D1
1001 B1
1002 A1
1005 F5
1006-1 F1
1006-10 G1
1006-11 G1
1006-2 I1
1006-3 I1
1006-4 H1
1006-5 F1
1006-6 G1
1006-7 H1
1006-8 H1
1006-9 G1
1008 F4
1024 D8
1025 D8
1026 B10
1027 B11
1321 F7
2100 A5
2102 A6
2103 A5
2104 F3
2105 F3
2106 B7
2107 B7
2108 H9
2109 B5
2110 B7
2111 G1
2112 G1
2113 G1
2114 I8
2115 B5
2116 B5
2117 I7
2118 H4
2119 H4
2120 C5
2121 D5
2122 D5
2123 C6
2124 D7
2125 D7
2126 E5
2127 E6
2220 H8
2221 I11
2281 I6
2282 I4
3100 F1
3101 F2
3102 F1
3103 A6
3104 I6
3105 I6
3106 I5
3107 I4
3110 G8
3113 G8
3114 A5
3115 A5
3116 A6
3117 F1
3129 H11
3130 H8
3131 B10
3132 B7
3134 G4
3135 G4
3136 B5
3137 B6
3138 B6
3139 I7
3140 H6
3141 I9
3142 C4
3143 H5
3144 H5
3145 C5
3146 H4
3147 C5
3148 D3
3149 D5
3150 D5
3151 D6
3152 D3
3154 D8
3155 E3
3156 E5
3157 E6
3158 E5
3159 E3
3277 H9
3278 I8
6000 G5
6001 G5
6002 G4
7005-D I8
7019 F1
7020 G2
7021 A4
7022 D4
7030 H6
7031 I4
7110-A H10
7110-B H9
7110-C H10
7110-D H11
7301 H8

F100 F3
F101 F1
F102 A11
F103 A2
F104 F4
F105 A11
F106 F1
F107 A2
F108 H8
F109 A2
F110 H9
F111 B6
F112 B2
F113 G1
F114 G1
F115 B2
F116 G1
F117 B2
F118 G4
F119 H5
F120 H1
F121 I7
F122 I8
F123 H1
F124 H1
F125 H1
F126 I6
F127 I5
F128 C5
F129 I1
F130 I5
F131 I4
F132 I1
F133 D2
F134 D9
F135 D5
F136 D2
F137 D6
F138 D2
F140 E5
F141 D9
F145 E2
F300 H4
F301 H4

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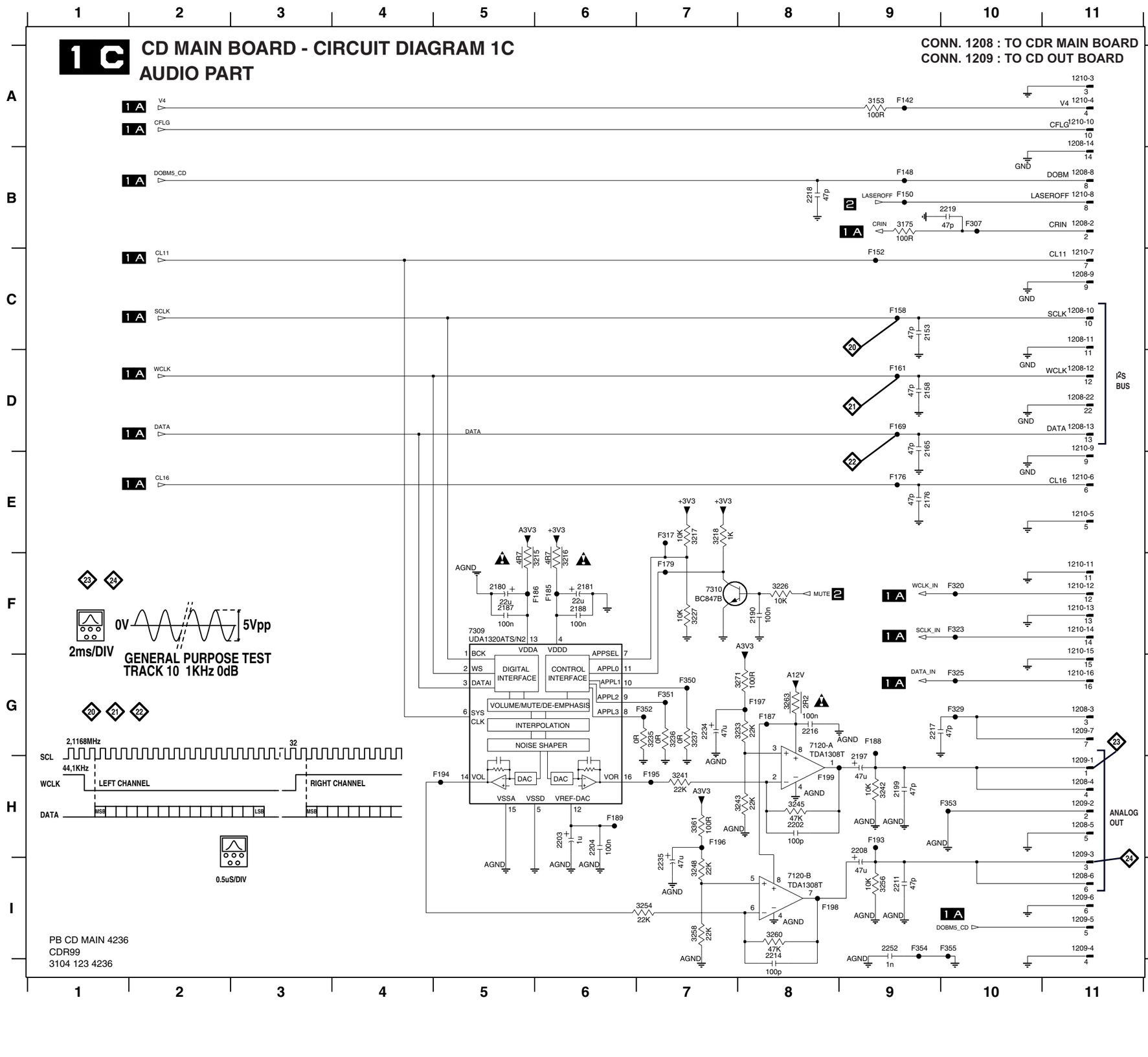
080999

CD main board: Audio part

1 C CD MAIN BOARD - CIRCUIT DIAGRAM 1C AUDIO PART

CONN. 1208 : TO CDR MAIN BOARD
CONN. 1209 : TO CD OUT BOARD



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1208-11 C11 F329 G10
1208-12 D11 F350 G7
1208-13 D11 F351 G7
1208-14 A11 F352 G7
1208-2 B11 F353 H10
1208-22 D11 F354 I9
1208-3 G11 F355 I10
1208-4 H11
1208-5 H11
1208-6 I11
1208-8 B11
1208-9 C11
1209-1 H11
1209-2 H11
1209-3 H11
1209-4 I11
1209-5 I11
1209-6 I11
1209-7 G11
1210-10 A11
1210-11 F11
1210-12 F11
1210-13 F11
1210-14 F11
1210-15 F11
1210-16 G11
1210-3 A11
1210-4 A11
1210-5 E11
1210-6 E11
1210-7 C11
1210-8 B11
1210-9 D11
2153 C9
2158 D9
2165 D9
2176 E9
2180 F5
2181 F6
2187 F5
2188 F6
2190 F8
2197 H9
2199 H9
2202 H8
2203 H6
2204 H6
2208 H9
2211 I9
2214 I8
2216 G8
2217 G9
2218 B8
2219 B10
2234 G7
2235 I7
2252 I9
3153 A9
3175 B9
3215 F5
3216 F6
3217 E7
3218 E7
3226 F8
3227 F7
3233 G8
3235 G7
3236 G7
3237 G7
3241 H7
3242 H9
3243 H8
3245 H8
3248 I7
3254 I7
3256 I9
3258 I7
3260 I8
3263 G8
3271 G8
3361 H7
7120-A G8
7120-B I8
7309 F5
7310 F7
F142 A9
F148 B9
F150 B9
F152 C9
F158 C9
F161 D9
F169 D9
F176 E9
F179 F7
F185 F6
F186 F5
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F189 H6
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F194 H5
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F197 G8
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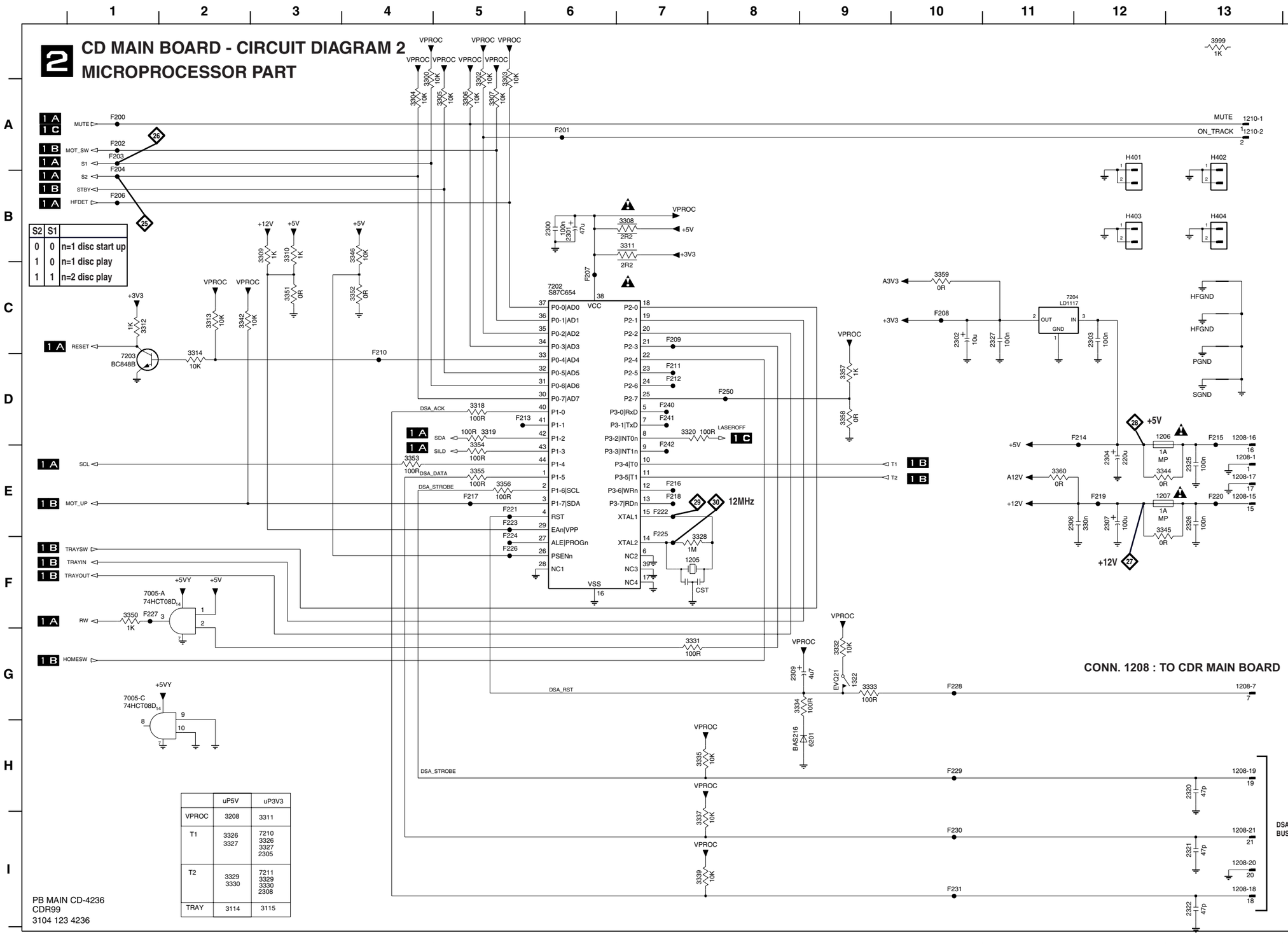
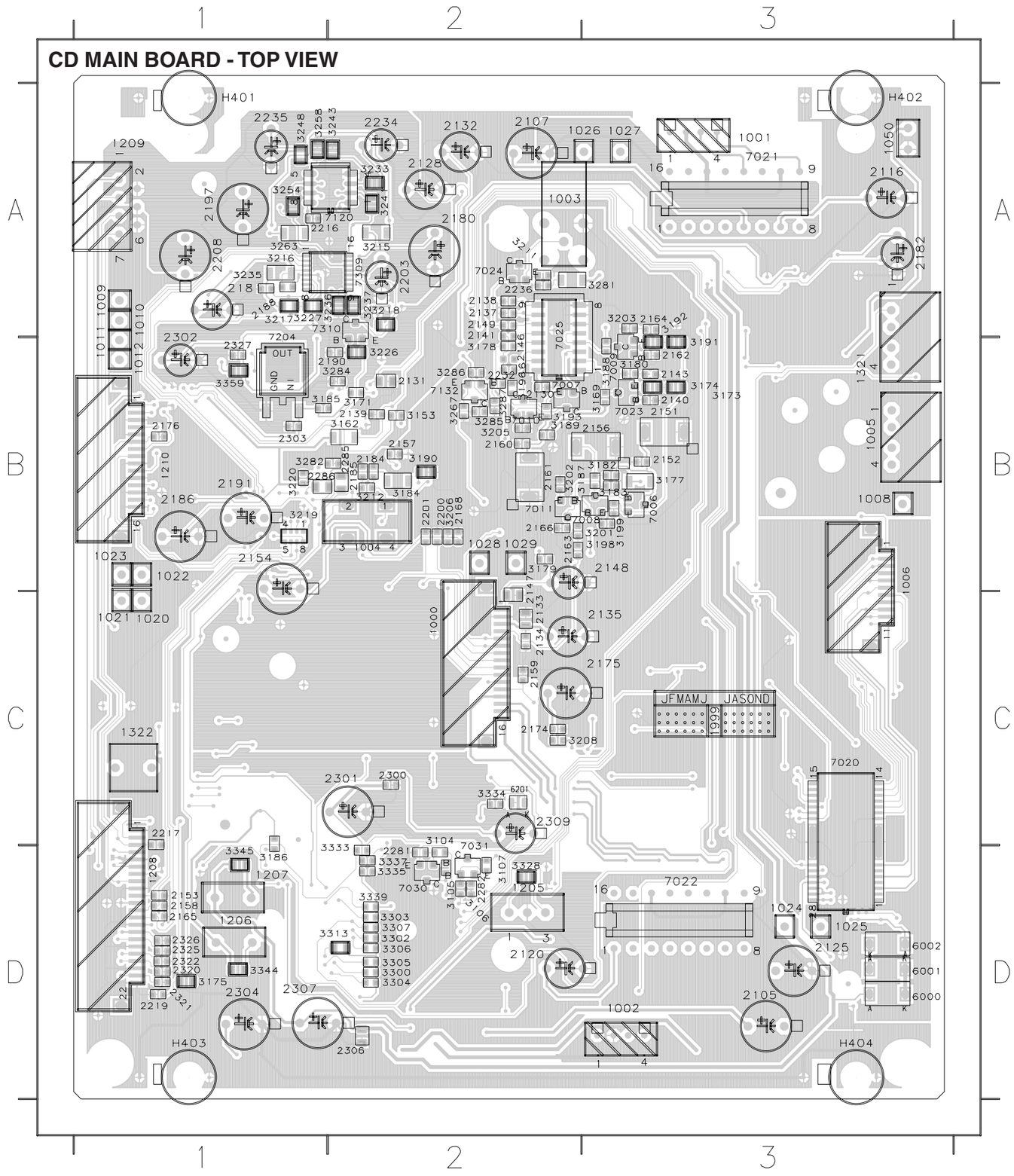
080999

CD main board: Microprocessor part



1205 F7
1206 D12
1207 E12
1208-1 E13
1208-15 E13
1208-16 D13
1208-17 E13
1208-18 I13
1208-19 H13
1208-20 I13
1208-21 I13
1208-7 G13
1210-1 A13
1210-2 A13
1322 G9
2300 B6
2301 B6
2302 C10
2303 C12
2304 E12
2306 E11
2307 E12
2309 G8
2320 H13
2321 I13
2322 I13
2325 E13
2326 E13
2327 C11
3300 A4
3302 A5
3303 A5
3304 A4
3305 A5
3306 A5
3307 A5
3308 B7
3309 B3
3310 B3
3311 B7
3312 C1
3313 C2
3314 D2
3318 D5
3319 D5
3320 D7
3328 F7
3331 G7
3332 G9
3333 G9
3334 G8
3335 H7
3337 I7
3339 I7
3342 C2
3344 E12
3345 E12
3346 B4
3350 F1
3351 C3
3352 C4
3353 E4
3354 E5
3355 E5
3356 E5
3357 D9
3358 D9
3359 C10
3360 E11
3999 A13
6201 H9
7005-A F1
7005-C G1
7202 C6
7203 D1
7204 C12
H401 A12
H402 A13
H403 B12
H404 B13

Layout CD Main board (top view)



1000	C2	2208	A1	3285	B2
1001	A3	2216	A1	3286	B2
1002	D3	2217	C1	3287	B2
1003	A2	2219	D1	3300	D2
1004	B2	2232	B2	3302	D2
1005	B3	2234	A2	3303	D2
1006	B3	2235	A1	3304	D2
1008	B3	2236	A2	3305	D2
1009	A1	2281	D2	3306	D2
1010	A1	2282	D2	3307	D2
1011	B1	2285	B2	3313	D2
1012	B1	2286	B1	3328	D2
1020	C1	2300	C2	3333	D2
1021	C1	2301	C2	3334	C2
1022	B1	2302	B1	3335	D2
1023	B1	2303	B1	3337	D2
1024	D3	2304	D1	3339	D2
1025	D3	2306	D2	3344	D1
1026	A3	2307	D1	3345	D1
1027	A3	2309	C2	3359	B1
1028	B2	2320	D1	6000	D3
1029	B2	2321	D1	6001	D3
1050	A3	2322	D1	6002	D3
1205	D2	2325	D1	6201	C2
1206	D1	2326	D1	7006	B3
1207	D1	2327	B1	7007	B2
1208	D1	3104	C2	7008	B3
1209	A1	3105	D2	7009	B3
1210	B1	3106	D2	7010	B2
1321	B3	3107	D2	7011	B2
1322	C1	3153	B2	7020	C3
2105	D3	3162	B2	7021	A3
2107	A2	3169	B3	7022	D3
2116	A3	3171	B2	7023	B3
2120	D2	3173	B3	7024	A2
2125	D3	3174	B3	7025	A2
2128	A2	3175	D1	7030	D2
2130	B2	3177	B3	7031	D2
2131	B2	3178	B2	7120	A2
2132	A2	3179	B2	7132	B2
2133	C2	3180	B3	7204	A1
2134	C2	3182	B3	7309	A2
2135	C3	3183	B3	7310	A1
2137	A2	3184	B2		
2138	A2	3185	B1		
2139	B2	3186	D1		
2140	B3	3187	B2		
2141	A2	3188	B3		
2143	B3	3189	B2		
2144	B2	3190	B2		
2146	B2	3191	B3		
2147	B2	3192	A3		
2148	B3	3193	B2		
2149	A2	3196	B2		
2151	B3	3198	B3		
2152	B3	3199	B3		
2153	D1	3201	B3		
2154	B1	3202	B2		
2156	B3	3203	A3		
2157	B2	3205	B2		
2158	D1	3206	B2		
2159	C2	3208	C3		
2160	B2	3211	A2		
2161	B2	3212	B2		
2162	B3	3215	A2		
2163	B2	3216	A1		
2164	A3	3217	A1		
2165	D1	3218	A2		
2166	B2	3219	B1		
2168	B2	3220	B1		
2174	C2	3226	B2		
2175	C3	3227	A1		
2176	B1	3233	A2		
2180	A2	3235	A1		
2181	A1	3236	A2		
2182	A3	3237	A2		
2184	B2	3241	A2		
2185	B2	3243	A2		
2186	B1	3248	A1		
2188	A1	3254	A1		
2190	B2	3258	A1		
2191	B1	3263	A1		
2197	A1	3267	B2		
2200	B2	3281	A3		
2201	B2	3282	B1		
2203	A2	3284	B2		

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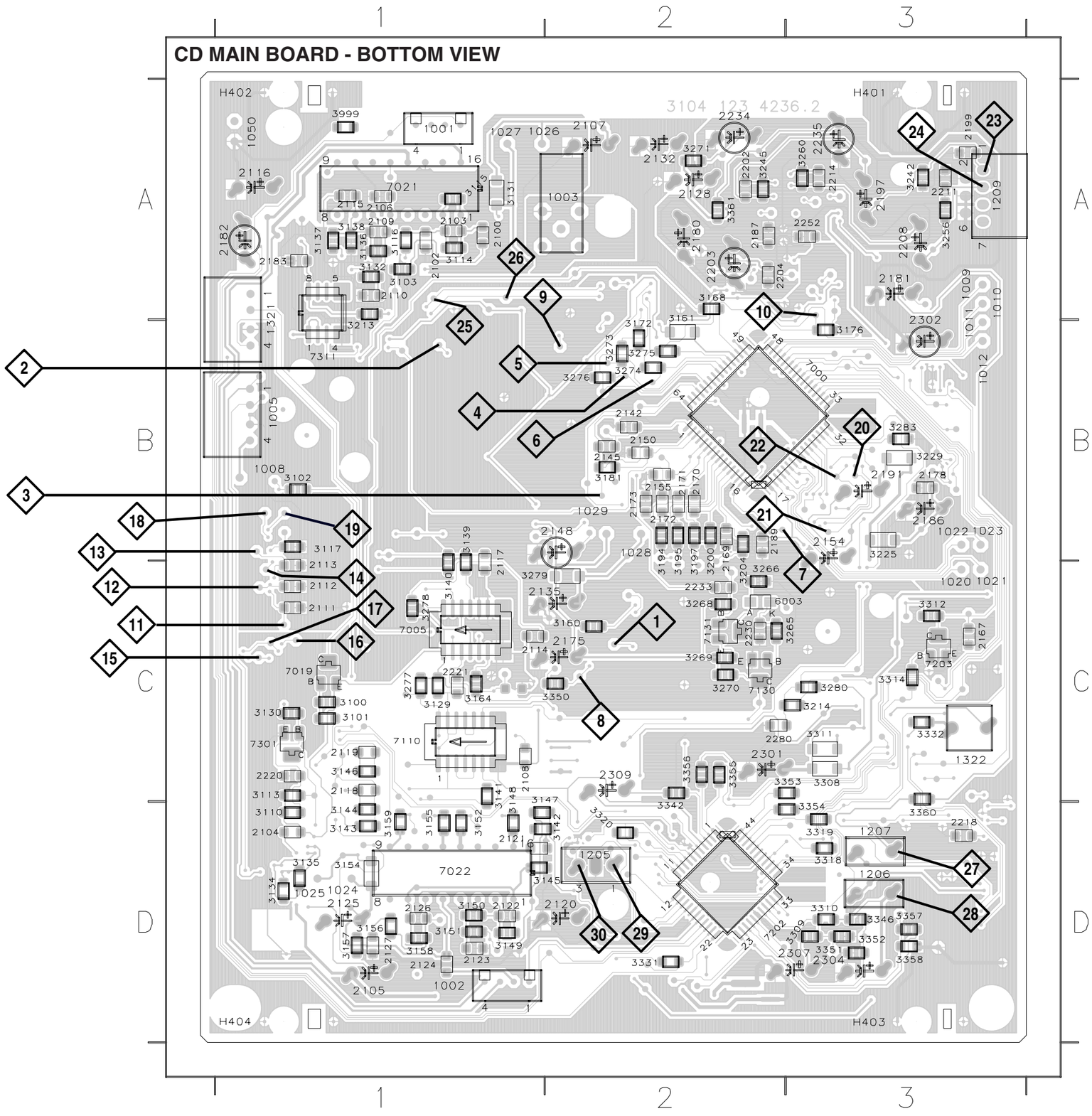
Layout CD Main board (bottom view)



2100 A1
2102 A1
2103 A1
2104 D1
2106 A1
2108 C1
2109 A1
2110 A1
2111 C1
2112 C1
2113 C1
2114 C1
2115 A1
2117 C1
2118 C1
2119 C1
2121 D1
2122 D1
2123 D1
2124 D1
2126 D1
2127 D1
2136 C1
2142 B2
2145 B2
2150 B2
2155 B2
2167 C3
2169 B2
2170 B2
2171 B2
2172 B2
2173 B2
2178 B3
2183 A1
2187 A2
2189 B2
2199 A3
2202 A2
2204 A2
2211 A3
2214 A3
2218 D3
2220 C1
2221 C1
2230 C2
2233 C2
2252 A3
2280 C2
3100 C1
3101 C1
3102 B1
3103 A1
3110 D1
3113 C1
3114 A1
3115 A1
3116 A1
3117 B1
3129 C1
3130 C1
3131 A1
3132 A1
3134 D1
3135 D1
3136 A1
3137 A1
3138 B1
3139 C1
3140 C1
3141 D1
3142 D2
3143 D1
3144 D1
3145 D2
3146 C1
3147 C2
3148 C1
3149 D1
3150 D1
3151 D1
3152 D1
3154 D1
3155 D1
3156 D1
3157 D1
3158 D1
3159 D1
3160 C2
3161 A2
3164 C1
3168 A2
3172 B2
3176 B3
3191 B1
3194 C1
3195 C2
3197 C2
3200 C2
3204 C2
3213 B1
3214 C3
3225 B3
3229 B3
3242 A3
3245 A2
3256 A3
3260 A3
3265 C3
3266 C2
3268 C2
3269 C2
3270 C2
3271 A2
3273 B2
3274 B2
3275 B2
3276 B2
3277 C1
3278 C1
3279 C1
3280 C3
3283 B3
3308 C3
3309 D3
3310 C3
3311 C3
3312 C3
3314 C3
3318 D3
3319 D3
3320 D2
3331 D2
3332 C3
3342 D2
3346 D3
3350 C2
3351 D3
3352 D3
3353 D3
3354 D3
3355 C2
3356 C2
3357 D3
3358 D3
3360 D3
3361 A2
3999 A1
6003 C3
7000 B3
7005 C1
7019 C1
7110 C1
7130 C2
7131 C2
7202 D2
7203 C3
7301 C1
7311 B1

CL 96532086_020.eps
080999

Personal notes:

Personal notes:

6. Diagnostic Software

6.1 Dealer mode

The purpose of the dealer mode is to prevent people taking out the CD inside the player at exhibitions, showrooms etc.. This mode disables the open/close function of the player. The dealer mode can be switched on and off pressing keys [OPEN/CLOSE] and [STOP] of the CDR player simultaneously while switching on the unit. The dealer mode is stored in the flash memory and can only be changed by executing the above actions.

6.2 Dealer diagnostics

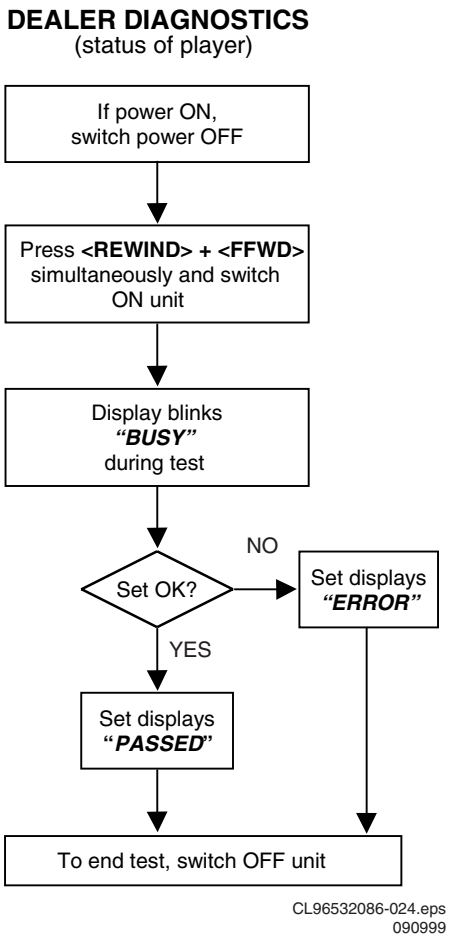


Figure 6-1

6.2.1 Description

The intention of the dealer diagnostics is to give an indication of the CDR player status. An inexperienced, even non-technical dealer will/can perform the test. Tests are executed automatically without need for external tools or disassembly of the unit. This test checks the CDR main board using the same tests as the electrical service diagnostics program. Only the result of the test, "PASSED" or "ERROR", will be shown on the display. Pressing keys [F FWD] and [REWIND] simultaneously while switching on the unit, starts the test. Switching off the unit ends the test.

6.2.2 Requirements to perform the test

- Working keyboard to start up the test.
- Working local display to check the output messages.

6.3 Electrical service diagnostics

ELECTRICAL SERVICE DIAGNOSTICS

(software versions, test for defective components)

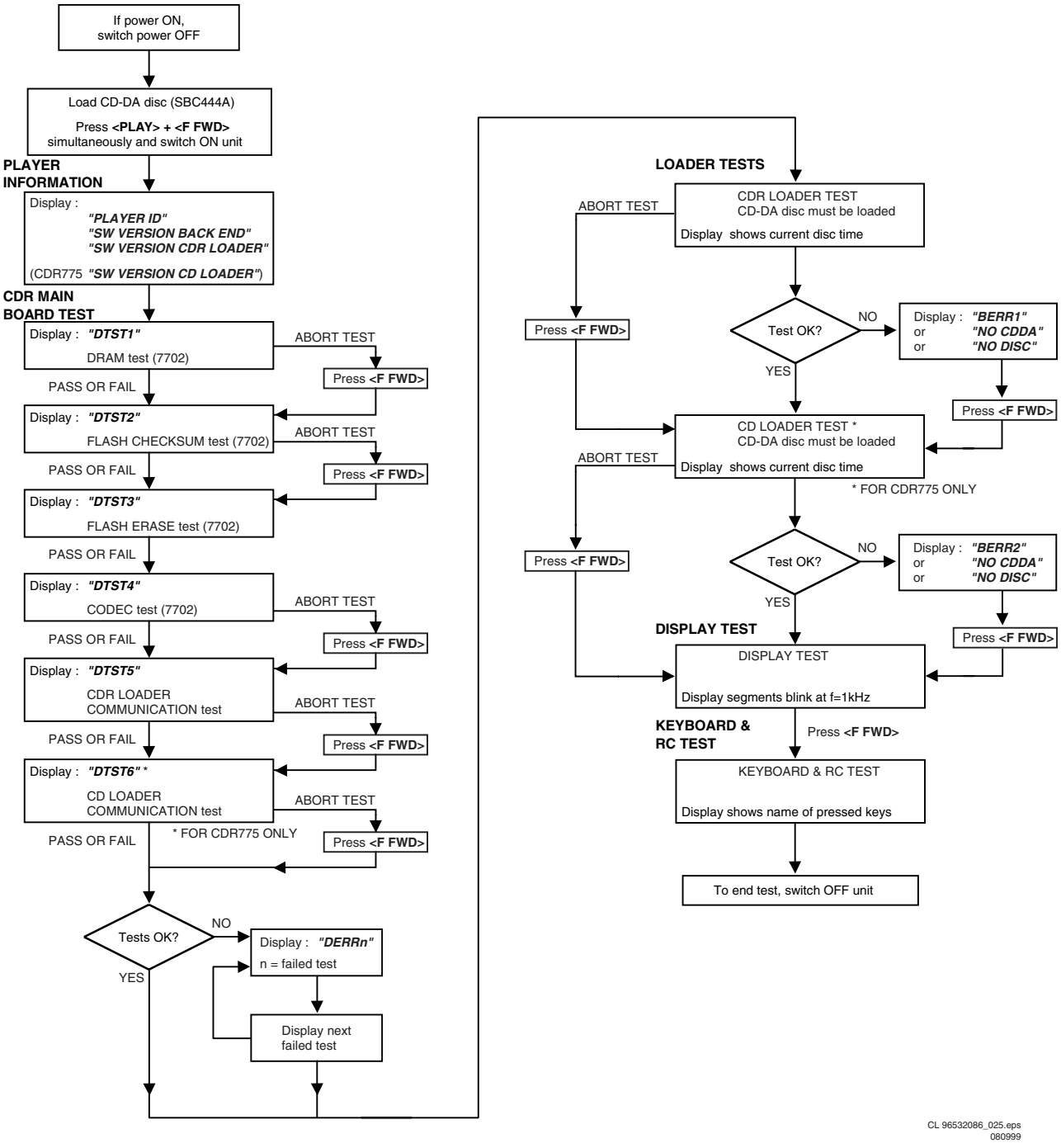

If power ON, switch power OFF
Load CD-DA disc (SBC444A)
Press <PLAY> + <F FWD> simultaneously and switch ON unit
PLAYER INFORMATION
Display : "PLAYER ID" "SW VERSION BACK END" "SW VERSION CDR LOADER"
(CDR775 "SW VERSION CD LOADER")
CDR MAIN BOARD TEST
Display : "DTST1" DRAM test (7702)
ABORT TEST
Press <F FWD>
PASS OR FAIL
Display : "DTST2" FLASH CHECKSUM test (7702)
Display : "DTST3" FLASH ERASE test (7702)
Display : "DTST4" CODEC test (7702)
Display : "DTST5" CDR LOADER COMMUNICATION test
Display : "DTST6" * CD LOADER COMMUNICATION test
* FOR CDR775 ONLY
Tests OK?
NO
YES
Display : "DERRn" n = failed test
Display next failed test
LOADER TESTS
CDR LOADER TEST
CD-DA disc must be loaded
Display shows current disc time
Test OK?
Display : "BERR1" or "NO CDDA" or "NO DISC"
CD LOADER TEST *
* FOR CDR775 ONLY
Display : "BERR2" or "NO CDDA" or "NO DISC"
DISPLAY TEST
Display segments blink at f=1kHz
KEYBOARD & RC TEST
Press <F FWD>
KEYBOARD & RC TEST
Display shows name of pressed keys
To end test, switch OFF unit
CL 96532086_025.eps
080999

Figure 6-2

6.3.1 Description

The intention of the electrical service diagnostics is to show the software versions present in the player and to direct the dealer towards defective internal units. The units are : the CDR main board, the CDR loader, the CD loader in case of a CDR779 and the keyboard/display board. A sequence of tests is executed automatically. Some of the tests can be aborted or skipped without the result being taken into account. External tools or disassembly of the unit is not necessary to get the diagnostic information. Pressing keys [PLAY/PAUSE] and [F FWD] simultaneously while switching on the unit, starts the test. Switching off the unit ends the test.

6.3.2 Requirements to perform the test

- Working keyboard to start up the test.
- Working local display to check the output messages.
- A CD-DA disc with a minimum of 3 tracks in all trays to perform the disc test.

6.3.3 Description of the tests

Player information
In this part of the test the following important information can be checked without removing the cover :
- Recorder ID.
- SW-version back end of player.
- SW-version CDR loader.
- SW-version CD loader (only for CDR779).

CDR main board test
[F FWD] key. The message "DERRn" will be displayed with n indicating the faulty test number.
If one of the tests is aborted with the [F FWD] key, no error message will be displayed for this test. The flash data erase test ("DTST3") can not be aborted !
The CDR main board test consists out of :

DRAM test
Display : "DTST1". The DRAM used for buffer management is tested by writing, reading and verifying test patterns.

Flash checksum test
Display : "DTST2". This test checks the checksum of the player's SW stored in the flash.

Flash data erase
Display : "DTST3". During this test, all temporary information (CDtxt) in the flash is erased.

CODEC (ADC/DAC) test
Display : "DTST4". This test checks the CODEC IC by writing, reading and verifying test patterns. The test is not applicable for CDR779.

CDR communication test
Display : "DTST5". The communication between the host processor (DASP) and the CDR loader via the DSA-R-bus is tested.

CD communication test
Display : "DTST6"). The communication between the host processor (DASP) and the CD loader is tested. The test is only applicable for CDR779.

Loader tests
These tests determine if the CDR loader and the CD loader in case of a CDR779 work correctly. A CD-DA disc with a minimum of 3 tracks needs to be inserted in both loaders. A disc test is executed to check focus control, disc motor control, radial control and jump grooves control. The disc test is performed by audio play-back of 5 seconds at the beginning, middle and end of the disc.

CDR loader test
During the test, the current disc time is shown. In case of an error the message "BERR1" will be displayed and the [F FWD] key must be pressed to continue with the following test. Pressing the [F FWD] key also aborts this test.

CD loader test
For CDR779 only. During the test, the current disc time is shown. In case of an error the message "BERR2" will be displayed and the [F FWD] key must be pressed to continue with the following test. Pressing the [F FWD] key also aborts this test.

Display test
All segments will blink at a frequency of 1 Hz. Pressing the [F FWD] key will start the next test because the user has to check for himself if all segments work properly.

Keyboard and remote control tests
The test will give the user the ability to test every key without executing the function assigned to it. Therefore, the user needs to press every key on the keyboard and the remote control. The display will show the name of the key being pressed. Pressing more than one key at once will give an unpredictable result except for the service combinations : [PLAY/PAUSE] + [STOP], [PLAY/PAUSE] + [F FWD], [F FWD] + [REWIND], [ERASE] + [RECORD], [PLAY/PAUSE] + [RECORD], [OPEN/CLOSE] + [PROGRAM].

6.4 Mechanical service diagnostics

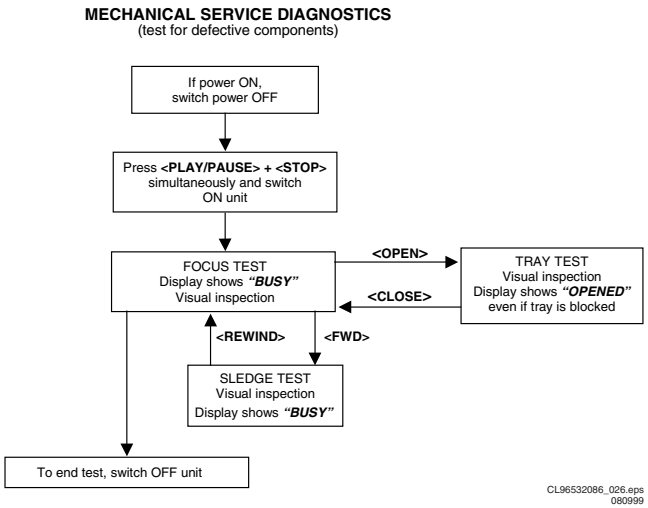


Figure 6-3

6.4.1 Description

No external tools are required to perform this test. The cover needs to be removed because the user has to check the movements of the tray, focus and sledge visually. Pressing keys [PLAY/PAUSE] and [STOP] simultaneously while switching on the unit, starts the test. Switching off the unit ends the test. In case of a CDR779, one can check the CD loader mechanics in the same way by pressing the above key combination on the CD player keys.

6.4.2 Requirements to perform the test

- Working keyboard to cycle through the tests and to start up the test.
- Working local display to check the output messages.

6.4.3 Description of the tests

Focus control test
The focussing lens is continuously moving up and down. The display reads "BUSY".

Sledge control test
After pressing [F FWD] the sledge continuously moves up and down. Pressing [REWIND] stops the sledge at the position it is in and the focus control test resumes. The display reads "BUSY".

Tray control test
This test starts from within the focus control test routine. Pressing [OPEN/CLOSE] moves the tray in or out. In the tray open position one can initiate focus and sledge tests by pressing [F FWD]. One has to stop these tests pressing [REWIND] before it is possible to close the tray again. Depending on the action the display reads "OPEN", "OPENED", "CLOSE" or "BUSY".

6.5 DC-erase service mode

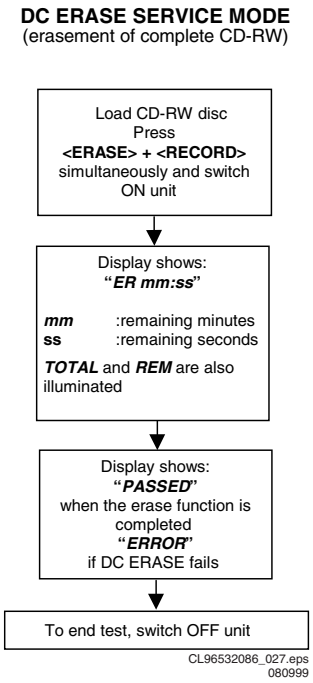


Figure 6-4

6.5.1 Description

This test is initiated by pressing [ERASE] and [RECORD] simultaneously while switching on the unit. The player will erase a complete CD-RW disc (including PMA and ATIP lead out area) at speed N=2. The display shows the countdown of the remaining time required for the operation to complete. The format is "ER mm:ss", where "mm" are the remaining minutes and "ss" the remaining seconds. After completion the message "PASSED" is shown, and the player has to be switched off and on again to start up in normal operating mode. Switching off the unit before completion of the test, leaves the disc in an unpredictable state. In such case only a complete DC-erase procedure can recover the CD-RW disc.

6.5.2 Requirements to perform the test

- Functional CDR player.
- A CD-RW audio disc must be present in the tray.

6.6 Burn in mode

6.6.1 Description:

The Burn In mode is an endless cycle of:
- DC-Erase to erase the CDRW disc with maximum laser power.
- Recording a CDRW disc
- Finalising at double speed

The Burn In mode is used to test intermittent faults of the loader.

6.6.2 Requirements to perform the test:

- Working Local Keyboard: needed to start up the test.
- Working Local Display: all output messages must be displayed on the local display.
- Analog source connected to the CDR99 player
- CDRW disc in tray

Burn in sequence
– Initialisation
The 'Burn In' mode is initiated by pressing the [PLAY/PAUSE] and [RECORD] key on the local keyboard at the same time, and then switching the POWER switch on.
– Continuous loop
The following picture shows the burn in sequence.

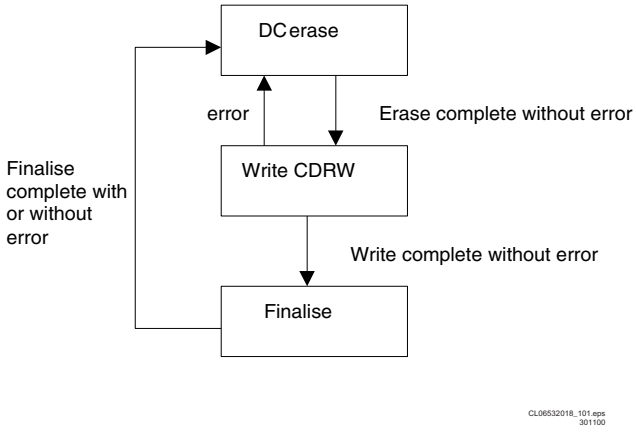


Figure 6-5 Burn in sequence

Continuously do DC erase, record complete CDRW and then finalise until the player is powered off.
When an error is detected during writing, the DC erase procedure is called again., the disc will be DC erased and the cycle starts again.
During the test the display shows the number of hours for which the test is running and the number of errors detected during the test. The display looks as follows : "HH BI RE FE"

HH	:	number of hours on digits 1 and 2
"BI"	:	burn in mode, digits 3 and 4
RE	:	number of errors detected during DC erase and write CDRW modes on digits 7 and 8
FE	:	number of errors detected during finalise modes on digits 10 and 11
If started up with a disc other than a CDRW disc the display shows	:	"WRONG DISC",
if no disc is inserted display	:	"NO DISC".

– End of test
To exit the Burn In mode, power off the player.

7. Faultfinding trees

7.1 CDR-Module

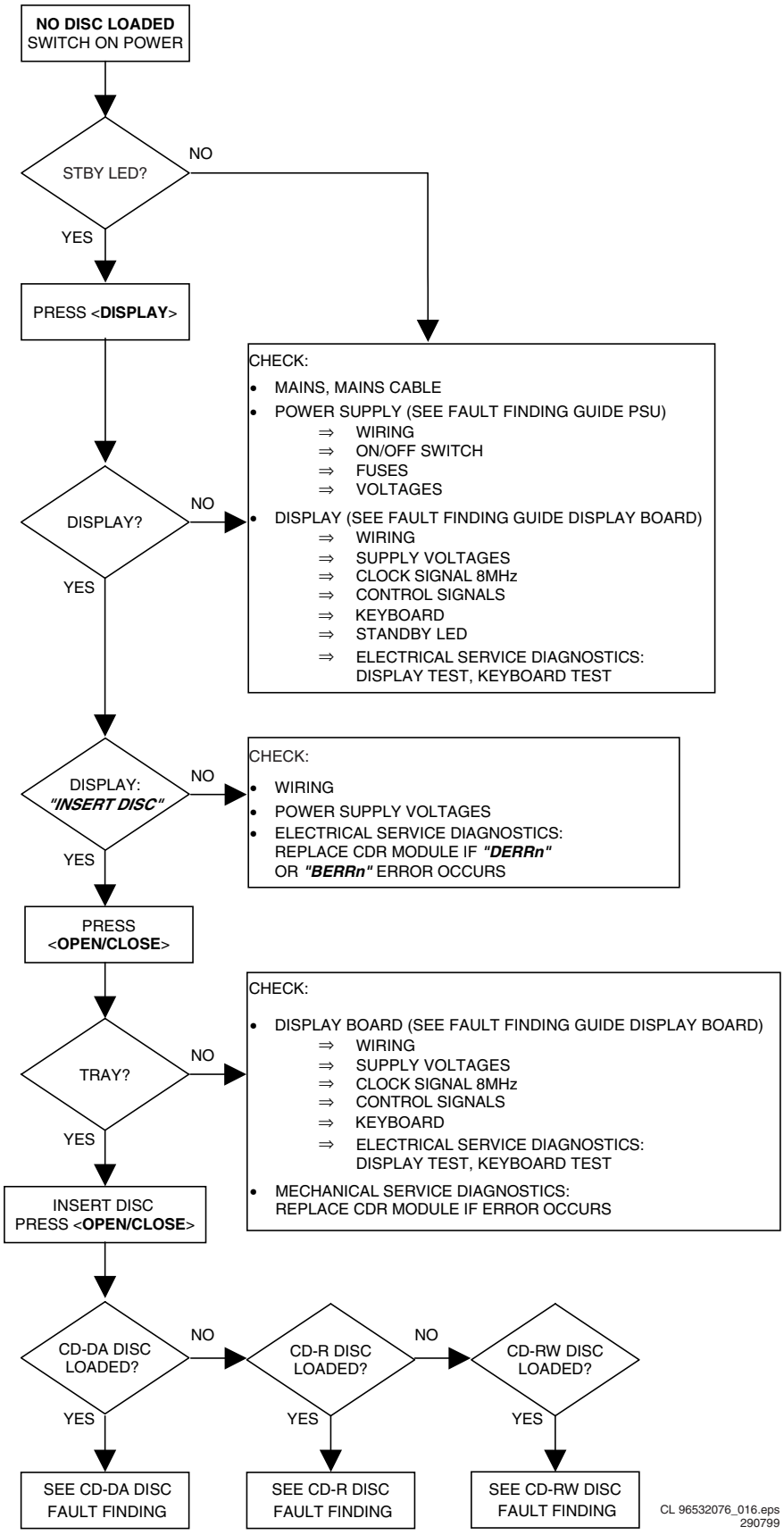


Figure 7-1

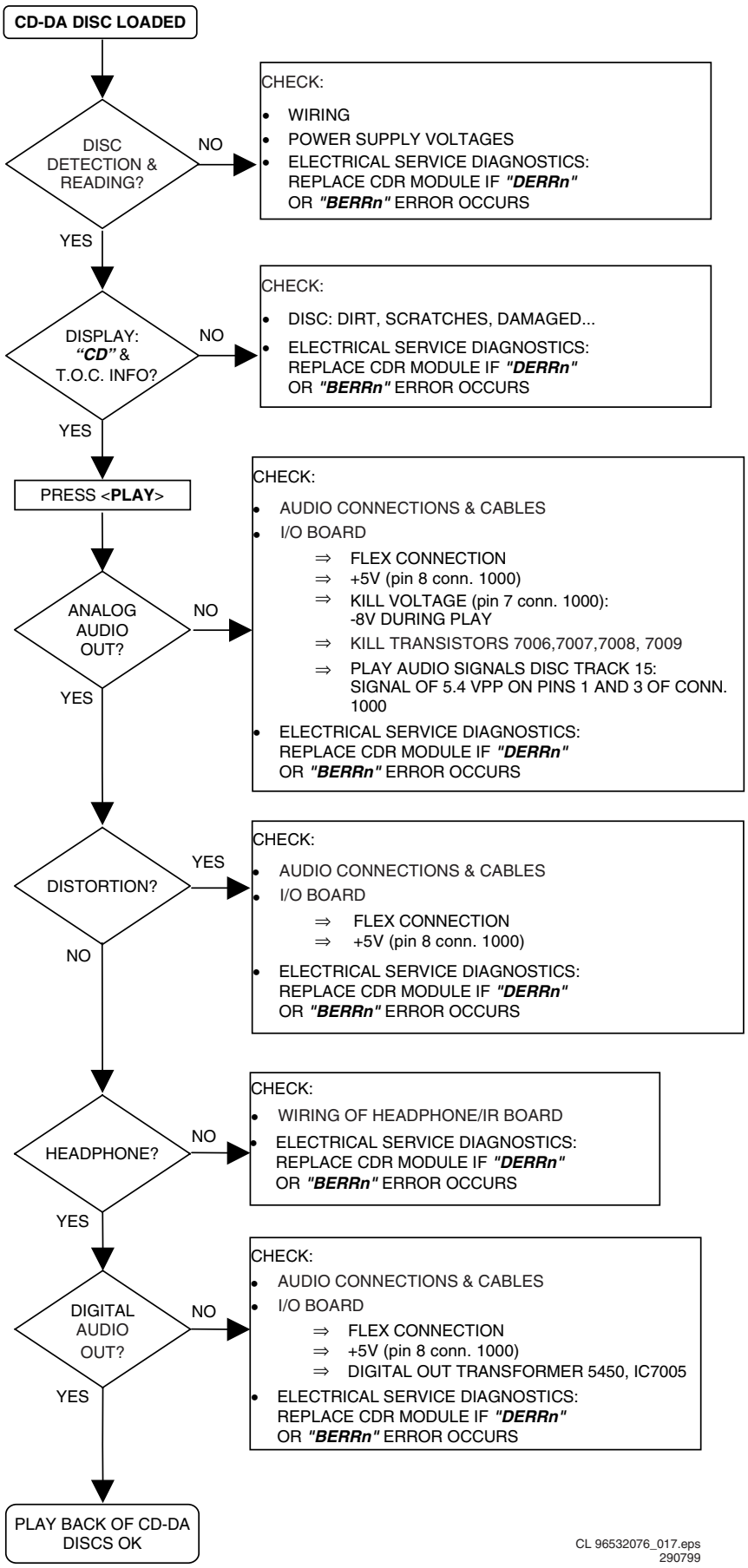

CD-DA DISC LOADED
DISC DETECTION & READING?
NO
CHECK:
• WIRING
• POWER SUPPLY VOLTAGES
• ELECTRICAL SERVICE DIAGNOSTICS: REPLACE CDR MODULE IF "DERRn" OR "BERRn" ERROR OCCURS
YES
DISPLAY: "CD" & T.O.C. INFO?
NO
CHECK:
• DISC: DIRT, SCRATCHES, DAMAGED...
• ELECTRICAL SERVICE DIAGNOSTICS: REPLACE CDR MODULE IF "DERRn" OR "BERRn" ERROR OCCURS
YES
PRESS <PLAY>
ANALOG AUDIO OUT?
NO
CHECK:
• AUDIO CONNECTIONS & CABLES
• I/O BOARD
⇒ FLEX CONNECTION
⇒ +5V (pin 8 conn. 1000)
⇒ KILL VOLTAGE (pin 7 conn. 1000): -8V DURING PLAY
⇒ KILL TRANSISTORS 7006,7007,7008, 7009
⇒ PLAY AUDIO SIGNALS DISC TRACK 15: SIGNAL OF 5.4 VPP ON PINS 1 AND 3 OF CONN. 1000
• ELECTRICAL SERVICE DIAGNOSTICS: REPLACE CDR MODULE IF "DERRn" OR "BERRn" ERROR OCCURS
YES
DISTORTION?
YES
CHECK:
• AUDIO CONNECTIONS & CABLES
• I/O BOARD
⇒ FLEX CONNECTION
⇒ +5V (pin 8 conn. 1000)
• ELECTRICAL SERVICE DIAGNOSTICS: REPLACE CDR MODULE IF "DERRn" OR "BERRn" ERROR OCCURS
NO
HEADPHONE?
NO
CHECK:
• WIRING OF HEADPHONE/IR BOARD
• ELECTRICAL SERVICE DIAGNOSTICS: REPLACE CDR MODULE IF "DERRn" OR "BERRn" ERROR OCCURS
YES
DIGITAL AUDIO OUT?
NO
CHECK:
• AUDIO CONNECTIONS & CABLES
• I/O BOARD
⇒ FLEX CONNECTION
⇒ +5V (pin 8 conn. 1000)
⇒ DIGITAL OUT TRANSFORMER 5450, IC7005
• ELECTRICAL SERVICE DIAGNOSTICS: REPLACE CDR MODULE IF "DERRn" OR "BERRn" ERROR OCCURS
YES
PLAY BACK OF CD-DA DISCS OK
CL 96532076_017.eps
290799

Figure 7-2

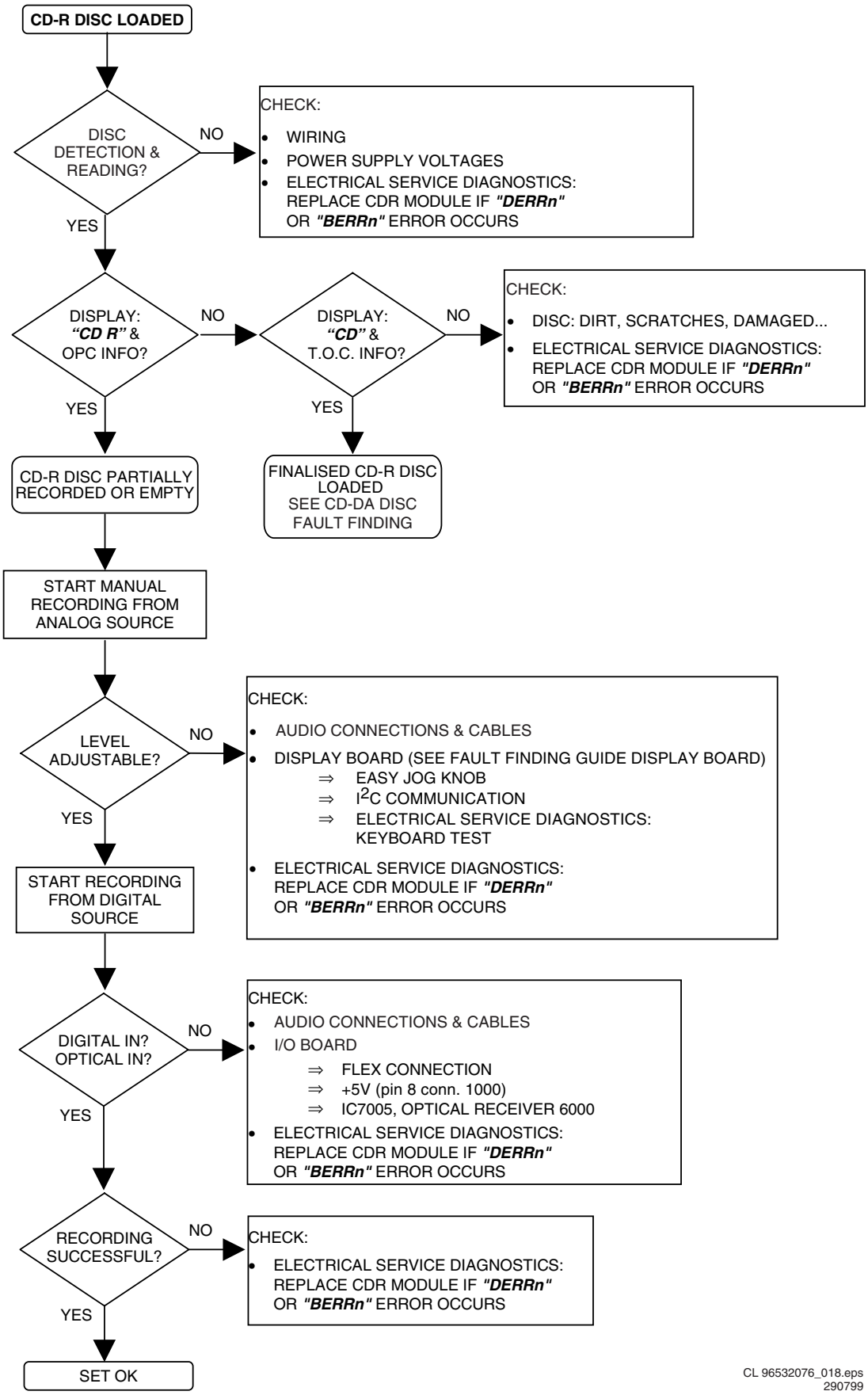

CD-R DISC LOADED
DISC DETECTION & READING?
NO
CHECK:
• WIRING
• POWER SUPPLY VOLTAGES
• ELECTRICAL SERVICE DIAGNOSTICS: REPLACE CDR MODULE IF "DERRn" OR "BERRn" ERROR OCCURS
YES
DISPLAY: "CD R" & OPC INFO?
NO
DISPLAY: "CD" & T.O.C. INFO?
NO
CHECK:
• DISC: DIRT, SCRATCHES, DAMAGED...
• ELECTRICAL SERVICE DIAGNOSTICS: REPLACE CDR MODULE IF "DERRn" OR "BERRn" ERROR OCCURS
YES
YES
CD-R DISC PARTIALLY RECORDED OR EMPTY
FINALISED CD-R DISC LOADED SEE CD-DA DISC FAULT FINDING
START MANUAL RECORDING FROM ANALOG SOURCE
LEVEL ADJUSTABLE?
NO
CHECK:
• AUDIO CONNECTIONS & CABLES
• DISPLAY BOARD (SEE FAULT FINDING GUIDE DISPLAY BOARD)
⇒ EASY JOG KNOB
⇒ I2C COMMUNICATION
⇒ ELECTRICAL SERVICE DIAGNOSTICS: KEYBOARD TEST
• ELECTRICAL SERVICE DIAGNOSTICS: REPLACE CDR MODULE IF "DERRn" OR "BERRn" ERROR OCCURS
YES
START RECORDING FROM DIGITAL SOURCE
DIGITAL IN? OPTICAL IN?
NO
CHECK:
• AUDIO CONNECTIONS & CABLES
• I/O BOARD
⇒ FLEX CONNECTION
⇒ +5V (pin 8 conn. 1000)
⇒ IC7005, OPTICAL RECEIVER 6000
• ELECTRICAL SERVICE DIAGNOSTICS: REPLACE CDR MODULE IF "DERRn" OR "BERRn" ERROR OCCURS
YES
RECORDING SUCCESSFUL?
NO
CHECK:
• ELECTRICAL SERVICE DIAGNOSTICS: REPLACE CDR MODULE IF "DERRn" OR "BERRn" ERROR OCCURS
YES
SET OK
CL 96532076_018.eps
290799

Figure 7-3

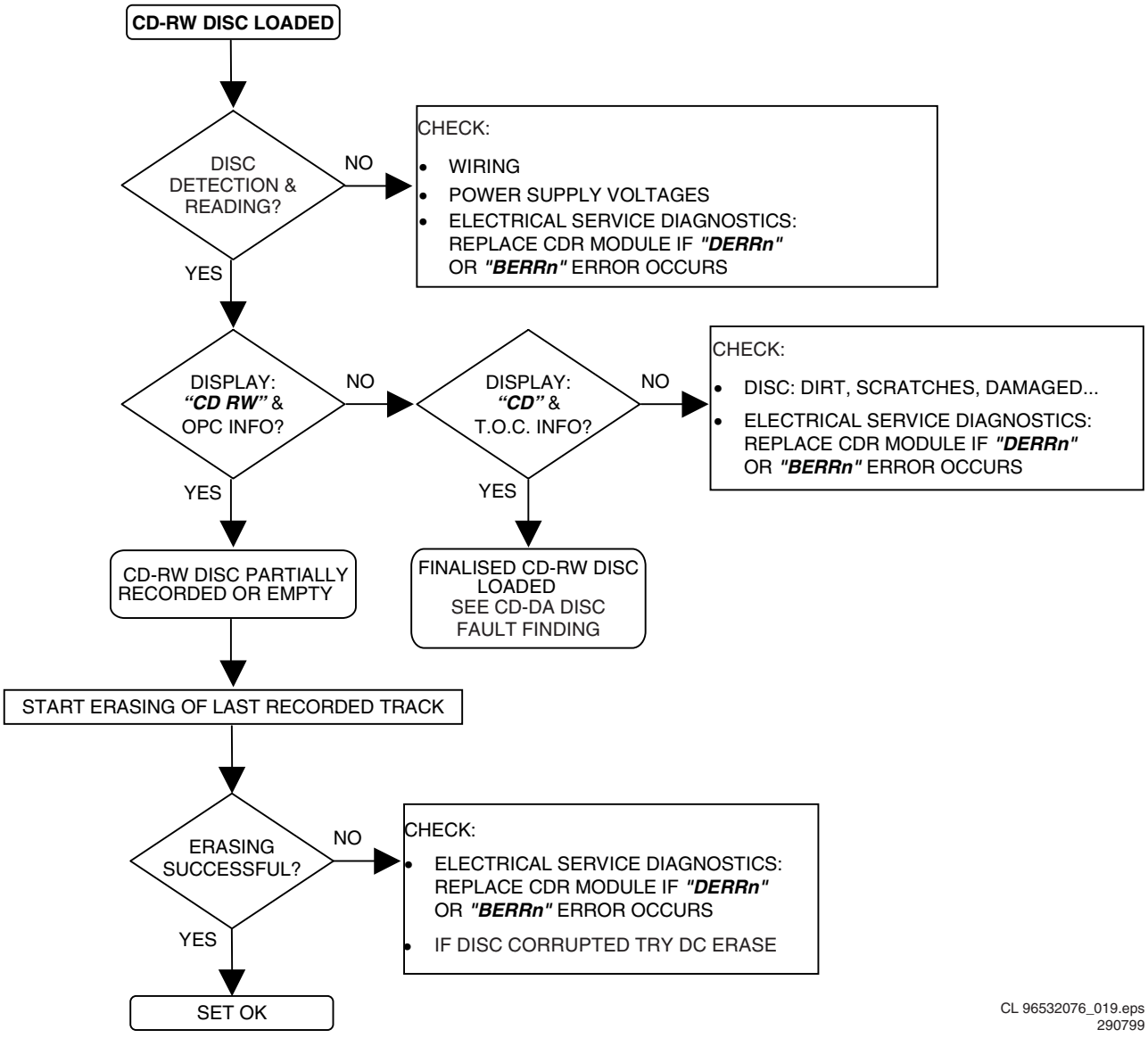

CD-RW DISC LOADED
DISC DETECTION & READING?
NO
CHECK:
• WIRING
• POWER SUPPLY VOLTAGES
• ELECTRICAL SERVICE DIAGNOSTICS: REPLACE CDR MODULE IF "DERRn" OR "BERRn" ERROR OCCURS
YES
DISPLAY: "CD RW" & OPC INFO?
NO
DISPLAY: "CD" & T.O.C. INFO?
NO
CHECK:
• DISC: DIRT, SCRATCHES, DAMAGED...
• ELECTRICAL SERVICE DIAGNOSTICS: REPLACE CDR MODULE IF "DERRn" OR "BERRn" ERROR OCCURS
YES
YES
CD-RW DISC PARTIALLY RECORDED OR EMPTY
FINALISED CD-RW DISC LOADED SEE CD-DA DISC FAULT FINDING
START ERASING OF LAST RECORDED TRACK
ERASING SUCCESSFUL?
NO
CHECK:
• ELECTRICAL SERVICE DIAGNOSTICS: REPLACE CDR MODULE IF "DERRn" OR "BERRn" ERROR OCCURS
• IF DISC CORRUPTED TRY DC ERASE
YES
SET OK
CL 96532076_019.eps
290799

Figure 7-4

7.2 CD Module

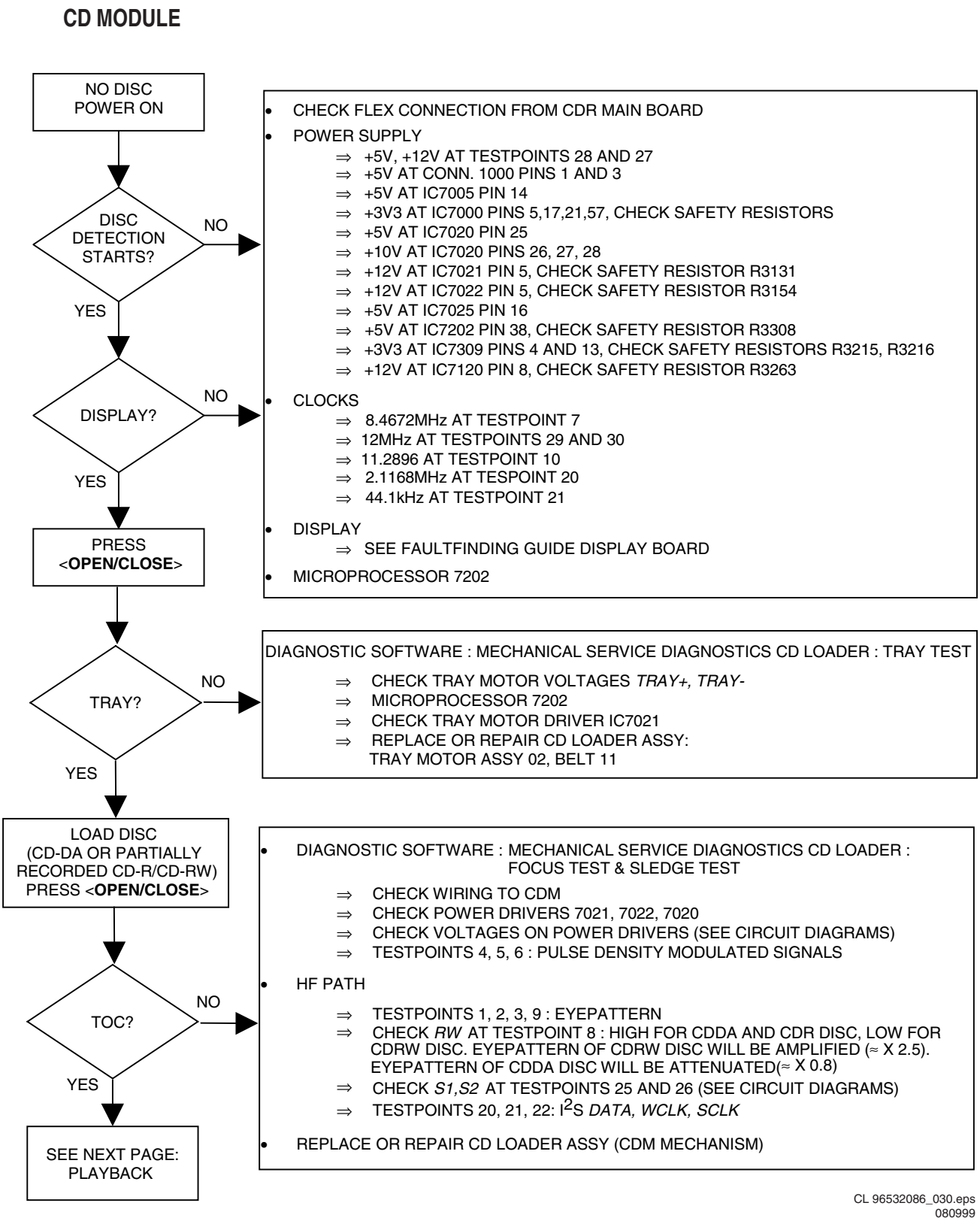

CD MODULE
NO DISC POWER ON
DISC DETECTION STARTS?
NO
YES
DISPLAY?
NO
YES
PRESS <OPEN/CLOSE>
TRAY?
NO
YES
LOAD DISC (CD-DA OR PARTIALLY RECORDED CD-R/CD-RW) PRESS <OPEN/CLOSE>
TOC?
NO
YES
SEE NEXT PAGE: PLAYBACK
• CHECK FLEX CONNECTION FROM CDR MAIN BOARD
• POWER SUPPLY
⇒ +5V, +12V AT TESTPOINTS 28 AND 27
⇒ +5V AT CONN. 1000 PINS 1 AND 3
⇒ +5V AT IC7005 PIN 14
⇒ +3V3 AT IC7000 PINS 5,17,21,57, CHECK SAFETY RESISTORS
⇒ +5V AT IC7020 PIN 25
⇒ +10V AT IC7020 PINS 26, 27, 28
⇒ +12V AT IC7021 PIN 5, CHECK SAFETY RESISTOR R3131
⇒ +12V AT IC7022 PIN 5, CHECK SAFETY RESISTOR R3154
⇒ +5V AT IC7025 PIN 16
⇒ +5V AT IC7202 PIN 38, CHECK SAFETY RESISTOR R3308
⇒ +3V3 AT IC7309 PINS 4 AND 13, CHECK SAFETY RESISTORS R3215, R3216
⇒ +12V AT IC7120 PIN 8, CHECK SAFETY RESISTOR R3263
• CLOCKS
⇒ 8.4672MHz AT TESTPOINT 7
⇒ 12MHz AT TESTPOINTS 29 AND 30
⇒ 11.2896 AT TESTPOINT 10
⇒ 2.1168MHz AT TESPOINT 20
⇒ 44.1kHz AT TESTPOINT 21
• DISPLAY
⇒ SEE FAULTFINDING GUIDE DISPLAY BOARD
• MICROPROCESSOR 7202
DIAGNOSTIC SOFTWARE : MECHANICAL SERVICE DIAGNOSTICS CD LOADER : TRAY TEST
⇒ CHECK TRAY MOTOR VOLTAGES TRAY+, TRAY-
⇒ MICROPROCESSOR 7202
⇒ CHECK TRAY MOTOR DRIVER IC7021
⇒ REPLACE OR REPAIR CD LOADER ASSY: TRAY MOTOR ASSY 02, BELT 11
• DIAGNOSTIC SOFTWARE : MECHANICAL SERVICE DIAGNOSTICS CD LOADER : FOCUS TEST & SLEDGE TEST
⇒ CHECK WIRING TO CDM
⇒ CHECK POWER DRIVERS 7021, 7022, 7020
⇒ CHECK VOLTAGES ON POWER DRIVERS (SEE CIRCUIT DIAGRAMS)
⇒ TESTPOINTS 4, 5, 6 : PULSE DENSITY MODULATED SIGNALS
• HF PATH
⇒ TESTPOINTS 1, 2, 3, 9 : EYEPATTERN
⇒ CHECK RW AT TESTPOINT 8 : HIGH FOR CDDA AND CDR DISC, LOW FOR CDRW DISC. EYEPATTERN OF CDRW DISC WILL BE AMPLIFIED (≈ X 2.5). EYEPATTERN OF CDDA DISC WILL BE ATTENUATED(≈ X 0.8)
⇒ CHECK S1,S2 AT TESTPOINTS 25 AND 26 (SEE CIRCUIT DIAGRAMS)
⇒ TESTPOINTS 20, 21, 22: I2S DATA, WCLK, SCLK
• REPLACE OR REPAIR CD LOADER ASSY (CDM MECHANISM)
CL 96532086_030.eps
080999

Figure 7-5

CD MODULE PLAYBACK

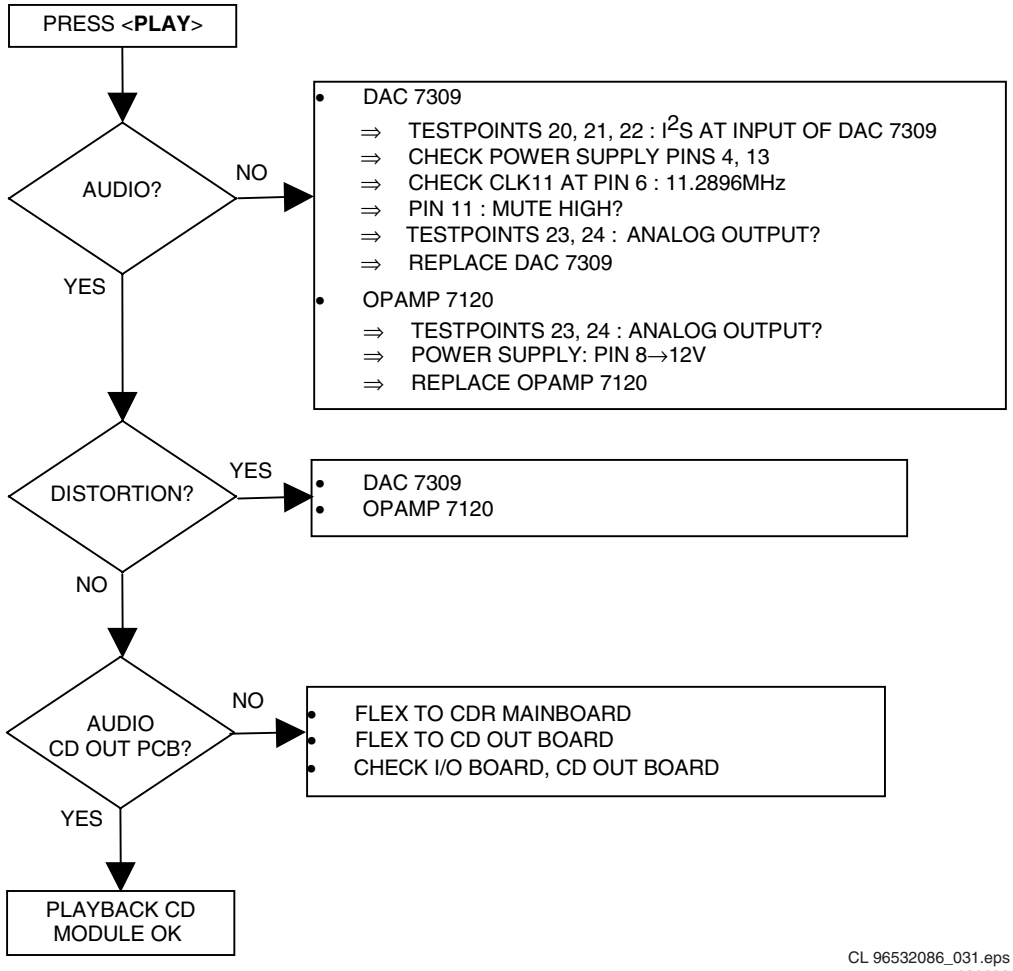


Figure 7-6

8. Faultfinding Guide

8.1 Display Board

8.1.1 Description of display board

General description

The display board has three major parts : the FTD (Fluorescent Tube Display), the display controller TMP87C874F and the keyboard. The display controller is controlled by the DASP master processor on the CDR main board. The communication protocol used is I2C. So all the information between DASP and display controller goes via the SDA or I2C DATA and SCL or I2C CLK lines. Communication is always initiated by the DASP on the CDR main board. Unlike the previous generations of CDR players, the interrupt generated by the display controller at key-press or reception of remote control is not used. Instead, the DASP polls the display controller for these events.

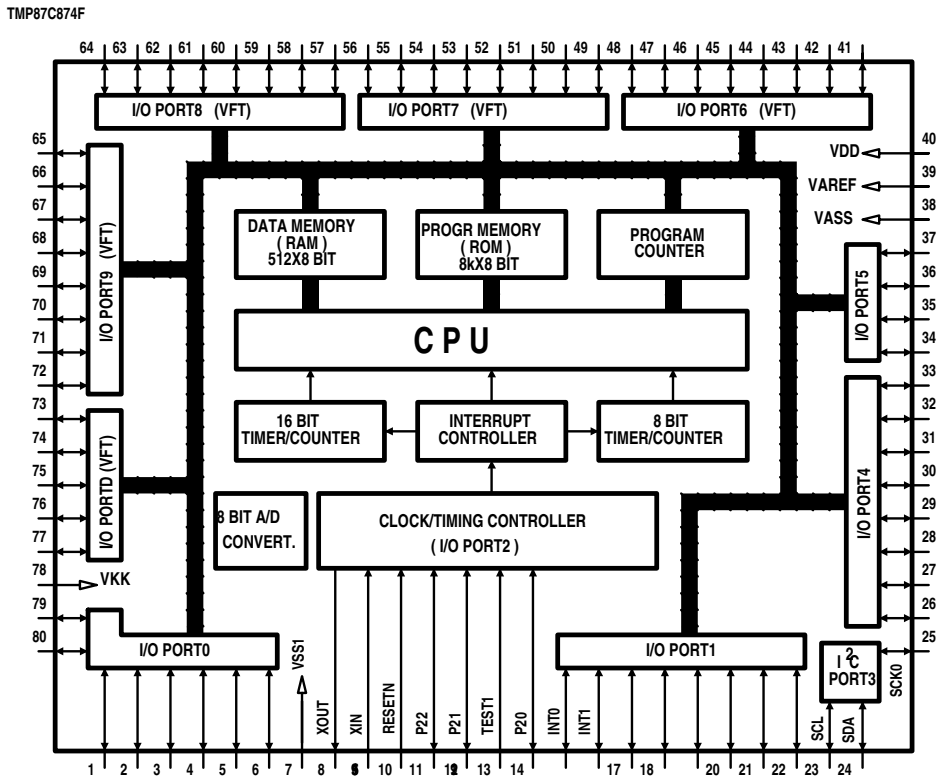
Display controller TMP87C874F

TMP87C874F (IC7104) is a high speed and high performance 8-bit single chip microprocessor, containing 8-bit A/D conversion inputs and a VFT (Vacuum Fluorescent Tube) driver. In this application, its functions are :

- slave microprocessor.
- FTD driver.
- generates the square wave for the filament voltage required for an AC FTD.
- generates the grid and segment scanning for the FTD.
- generates the scanning grid for the key matrix.
- input for remote control.

All the communication runs via the serial bus interface I2C. The display controller uses an 8MHz resonator as clock driver.

BLOCK DIAGRAM



CL 96532076_028.eps
290799

PIN DESCRIPTIONS

INT0	external interrupt input 0
INT1	external interrupt input 1
RESETN	reset signal input, active low
SCL	I2C-bus serial clock input/output
SDA	I2C-bus serial data input/output
TEST	test pin, tied to low
VAREF	analog reference voltage input
VASS	analog reference ground
VDD	+5V
VKK	VFT driver power supply
VSS	ground
XIN, XOUT	resonator connecting pins for high-frequency clock

Figure 8-1

8.1.2 Test instructions

Supply voltages

The display board receives several voltages via connector 1119 (and connector 1121 for CDR570/930).

- VFTD : -38V ±5% measured at pin 2 of conn. 1119.
- VDC1-VDC2 : 3V8 ±10% measured between pin 1 and 3 of conn. 1119.
- +5V : +5V ±5% measured at pin 10 of conn. 1119 (pin 4 of conn. 1121 for CDR770).

Voltages VFTD, VDC1 and VDC2 are produced in the power supply unit and sent to the display board via the CDR main board. The +5V voltage is produced on the CDR main board as D5V.

Clock signal

As clock driver for the display controller, a resonator of 8 MHz (1110) is used. The signal can be measured at pins 8 and 9 of the display controller : 8 MHz ±5%.

Control signals

RESET

The reset signal comes via pin 4 of conn. 1119 from the DASP master processor on the CDR main board (SYS_RESET). The reset is low active. It should be kept low during power up for at least 3 machine cycles with supply voltage in operating range and a stable clock signal (1 machine cycle = 12 x 1/Fc (8 MHz) sec.). During normal operation, the reset should be high (3V3). The high signal is 3V3 because the DASP operates on 3V3.

I2C DATA/I2C CLK

These lines connect to the DASP master processor via respectively pin 5 and pin 7 of conn. 1119 (pin 5 of conn. 1119 and pin 1 of conn. 1121 for CDR570/930). When there is no communication, they should have the high level (+5V). The oscillogram below gives an indication of how these signals should look like.

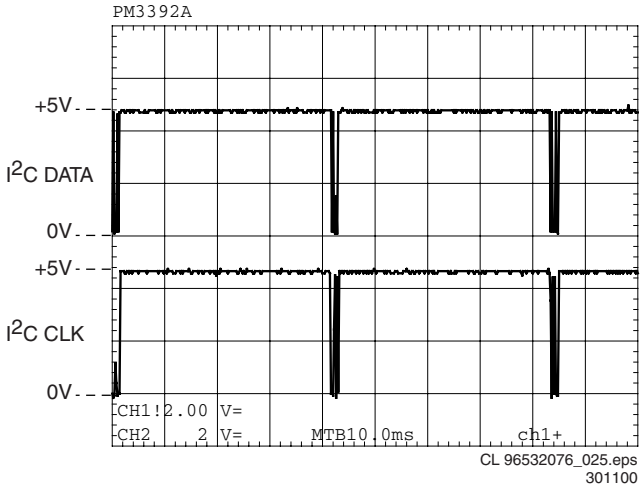


Figure 8-2 'I2C signals'

FTD drive lines

Filament voltage

Should measure 3.8V ±10% (=VDC1-VDC2) between pins 1-2-3 and pins 45-46-47 (pins 1-2 and pins 48-49 for CDR770) of the FTD (1113).

Grid lines

Level and timing of all grid lines, G1-->G15, can be checked either at the FTD itself or at the display controller. Grid lines G13, G14 and G15 each have an extra current amplifier in line : T7203 for G13, T7204 for G14 and T7100 for G15. A typical grid line signal shows in the oscillogram below.

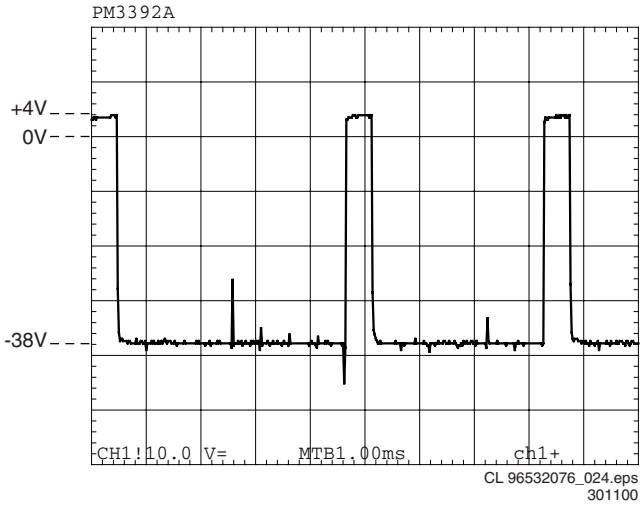


Figure 8-3 'Gridline'

Segment lines

Level and timing of all segment lines, P1-->P21 (P1-->P20 for CDR770), can be checked either at the FTD itself or at the display controller. The data on these segment lines however, depends on the characters displayed. The oscillogram below shows a segment line with data. A segment line without data maintains a -38V level.

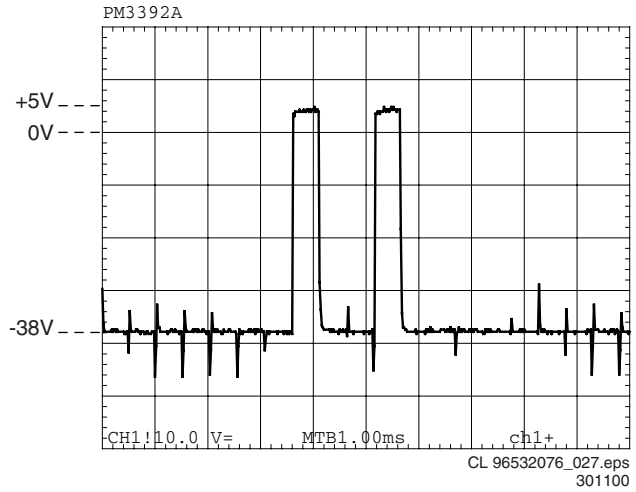


Figure 8-4 'Segment line'

Key matrix lines

The lines connected to pins 34, 35, 36 and 37 of the display controller act as matrix scanners. Without a key pressed, they maintain a low level. As soon as a key is pressed, the scanning line connected to that key puts out a scanning signal, which should look like the oscillogram below. This scanning signal goes via the pressed key to I/O port 4 of the display controller (pins 28 to 33). The display controller can now determine which key has been pressed. Without a key pressed, pins 28 to 33 of the display controller maintain a high level (+5V).

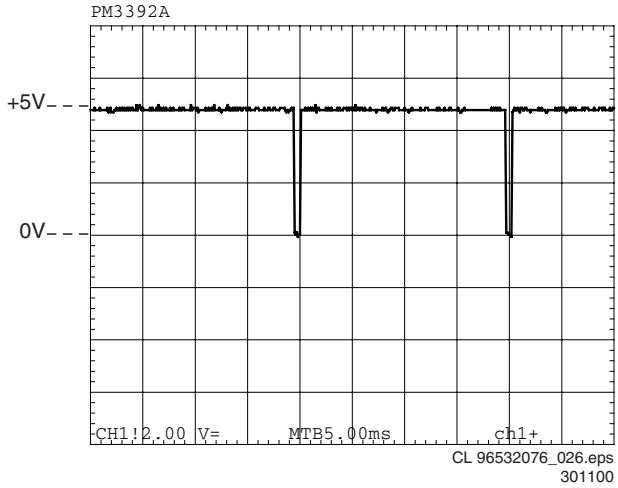


Figure 8-5 'Key matrix scan line'

Easy jog knob

Rotary operation
The easy jog knob (1050) incorporates a whole heap of user control possibilities in just one knob. Without the knob being operated, pin 1 and 3 of the knob (and thus pin 16 and 17 of the display controller), maintain the +5V level. Turning the knob clockwise briefly connects pin 1 to GND followed by pin 3.

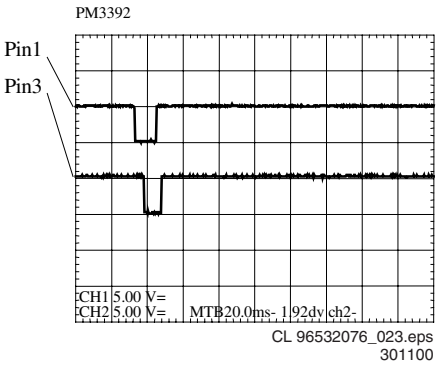


Figure 8-6 'Turn clockwise'

Turning the knob anti-clockwise briefly connects pin 3 to GND followed by pin 1.

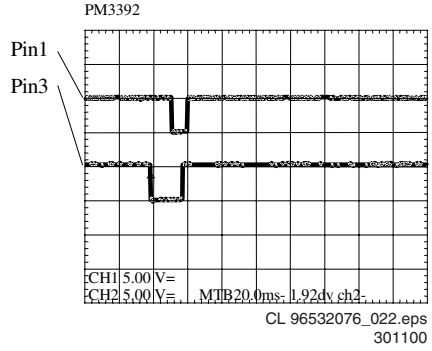


Figure 8-7 'Turn anti-clockwise'

The pulses created this way arrive at pin 16 and 17 of the display controller. The first pulse to arrive tells the controller the direction of the rotation. Counting the pulses reveals the amount of rotation. Combining and decoding this information, the display controller will execute the appropriate task.

Push button operation
This button connects to the key matrix lines and thus the operation is identical to the ordinary keys. Without being pressed, pin 4 of the easy jog maintains the low level, pin 5 the high level. When pressed the scanning signal goes through the closed contact of pins 4 and 5, and can be checked at both pins.

IR receiver - remote control
In the CDR570/930 the IR receiver TSOP1736 (6101) is mounted on the display board. In the CDR770 that same IR receiver (6200) is mounted on a small board together with the headphone socket. In the CDR779 the IR receiver (6200) is mounted on its own small board. In all versions the IR receiver connects to the display controller. The signal coming from the receiver can be checked at pin 22 of the display controller. This signal is normally high (+5V). When the remote control is being operated, pulses mixed in with the +5V can be measured. The oscillogram gives an indication of how the signal looks like with the RC being operated.

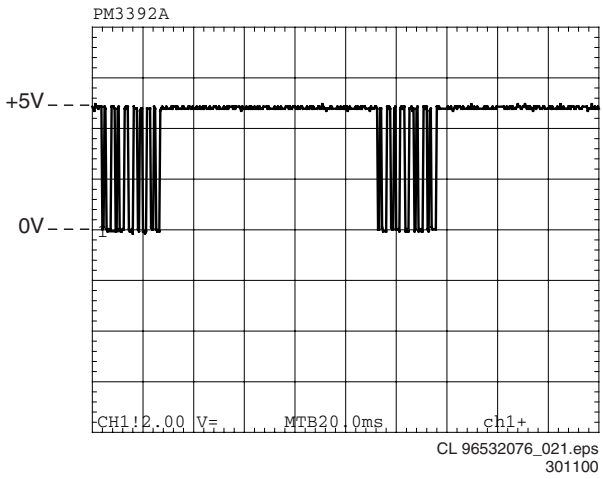


Figure 8-8 'IR receiver signal'

8.1.3 Display board troubleshooting guide

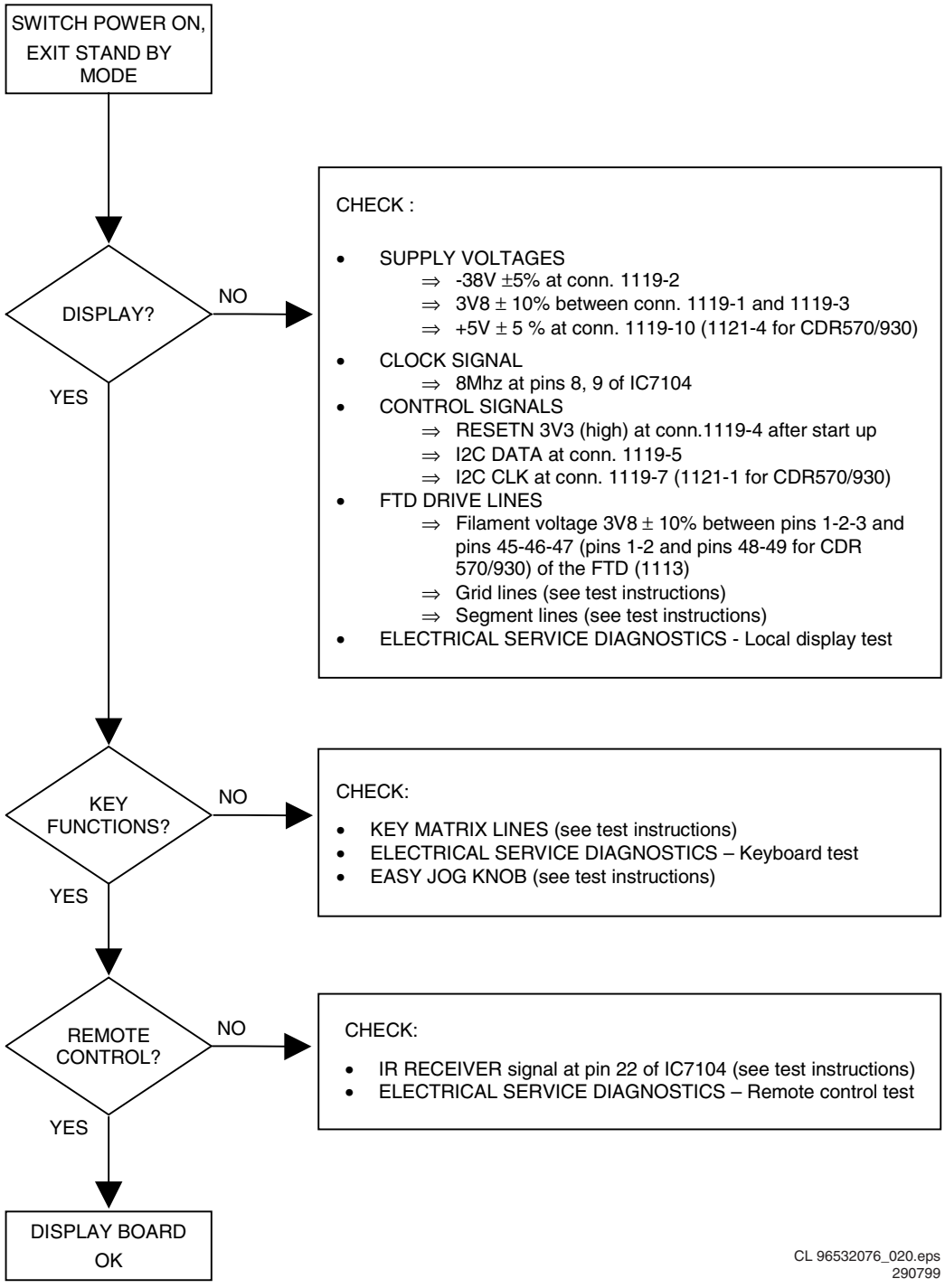

SWITCH POWER ON, EXIT STAND BY MODE
DISPLAY?
NO
YES
CHECK :
• SUPPLY VOLTAGES
⇒ -38V ±5% at conn. 1119-2
⇒ 3V8 ± 10% between conn. 1119-1 and 1119-3
⇒ +5V ± 5 % at conn. 1119-10 (1121-4 for CDR570/930)
• CLOCK SIGNAL
⇒ 8Mhz at pins 8, 9 of IC7104
• CONTROL SIGNALS
⇒ RESETN 3V3 (high) at conn.1119-4 after start up
⇒ I2C DATA at conn. 1119-5
⇒ I2C CLK at conn. 1119-7 (1121-1 for CDR570/930)
• FTD DRIVE LINES
⇒ Filament voltage 3V8 ± 10% between pins 1-2-3 and pins 45-46-47 (pins 1-2 and pins 48-49 for CDR 570/930) of the FTD (1113)
⇒ Grid lines (see test instructions)
⇒ Segment lines (see test instructions)
• ELECTRICAL SERVICE DIAGNOSTICS - Local display test
KEY FUNCTIONS?
NO
YES
CHECK:
• KEY MATRIX LINES (see test instructions)
• ELECTRICAL SERVICE DIAGNOSTICS – Keyboard test
• EASY JOG KNOB (see test instructions)
REMOTE CONTROL?
NO
YES
CHECK:
• IR RECEIVER signal at pin 22 of IC7104 (see test instructions)
• ELECTRICAL SERVICE DIAGNOSTICS – Remote control test
DISPLAY BOARD OK
CL 96532076_020.eps
290799

Figure 8-9 'Display board troubleshooting'

8.2 Circuit description of the current mode power supply

8.2.1 Blockdiagram

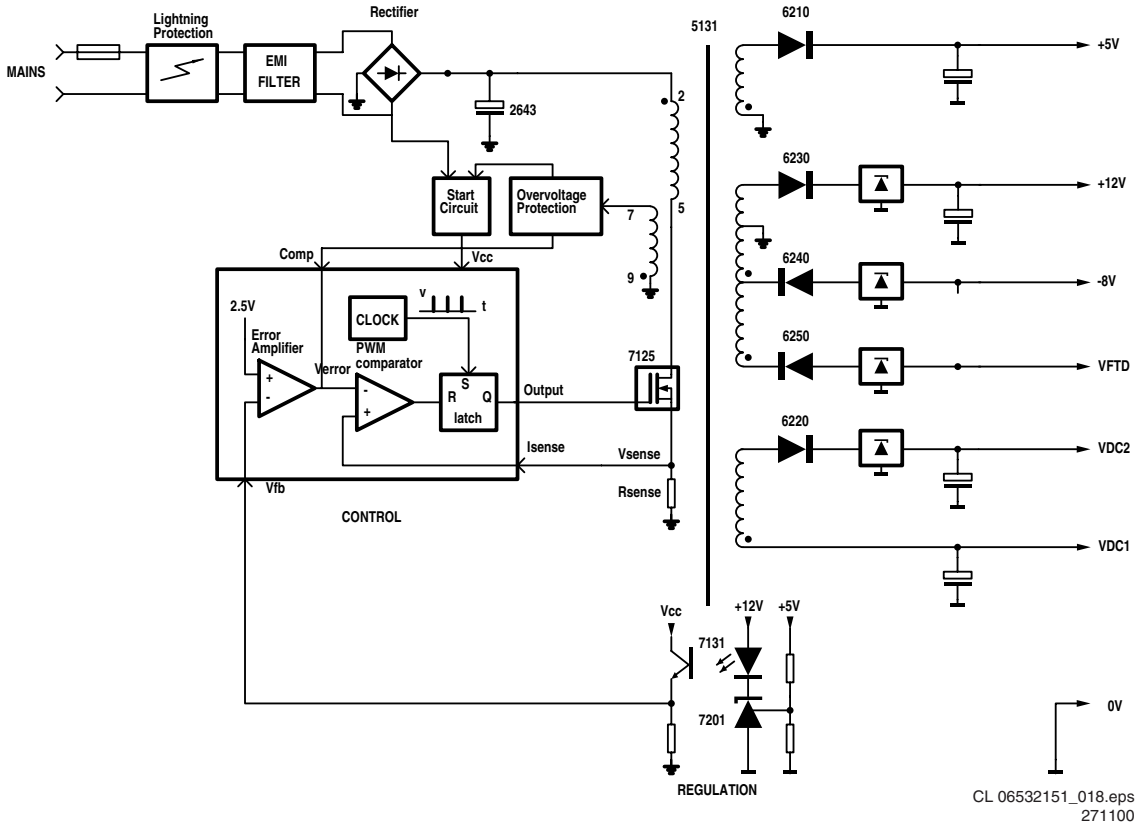


Figure 8-10

8.2.2 Function description

MOSFET 7125 is used as a power switch controlled by the controller IC 7110. When the switch is closed, energy is transferred from mains to the transformer. This energy is supplied to the load when the switch is opened. Through control of the switched-on time, the energy transferred in each cycle is regulated so that the output voltages are independent of load or input voltage variations. The controlling device UC3842 is an integrated pulse width modulator. A clock signal initiates power pulses at a fixed frequency. The termination of each output pulse occurs when a feedback signal of the inductor current reaches a threshold set by the error signal. In this way the error signal actually controls the peak inductor current on cycle-by cycle basis.

8.2.3 Description of UC3842

The input voltage Vcc(pin 7) is monitored by a comparator with hysteresis, enabling the circuit at 16V and disabling the circuit below 10V. The error amplifier compares a voltage Vfb(pin 2) related to the output voltage of the power supply, with an internal 2.5V reference. The current sense comparator compares the output of the error amplifier with the switch current Isense(pin 3) of the power supply. The output of the current sense comparator resets a latch, which is set every cycle by the oscillator. The output stage is a totem pole, capable of driving a MOSFET directly

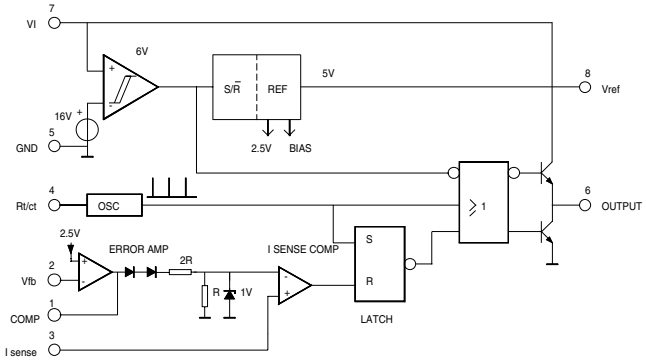


Figure B : Blockdiagram UC3842 CL 06532151_019.eps 271100

Figure 8-11

8.2.4 Start up sequence

t1: Charging the capacitor at Vcc
C2129 wiil be charged via R3123 and R3134, C2133 and C2111 via R3129. The output is switched off
During t1.
t2: Charging of output capacitors
When the input voltage of the IC exceeds 14,5V, the circuit is enabled and starts to produce output pulses. The current consumption of the circuit increases to about 17mA, depending on the external loads of the IC. At first, the

capacitor at the Vcc pin will discharge because the primairy auxiliary voltage, coming from winding7-9 is below the Vcc voltage. At some moment during t2, the primary auxiliary voltages reaches the same level as Vcc.
This primary auxiliary voltage now determines the Vcc voltage
t3: regulation
The output voltage of the power supply is in regulation
t4: overload
When the output is shortened, the supply voltage of the circuit will decrease and after some time drop below the lower threshold voltage. At that moment, the output will be disabled and the process of charging the Vcc capacitor starts again. If the output is still shorted at the next t2 phase, the complete start-and stop sequence will repeat. The power supply comes in a hiccup mode.

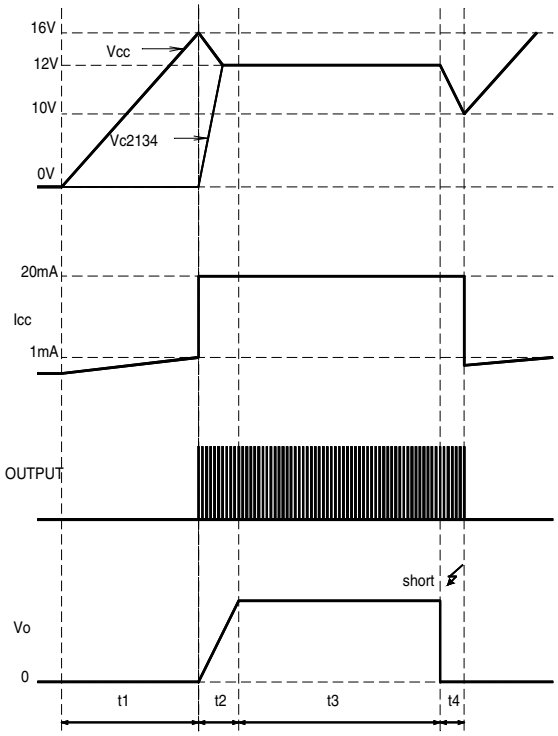


Figure C : Start-up sequence

Figure 8-12

becomes reversed. This results in a current flow through the tranformer's secondary winding via the diodes, electrolytic capacitors and the load. This current is also ramp shaped but decreasing.
TimeDEAD phase : when the stored energy has been supplied to the load, the voltage from the secondary windings falls below the output voltage(held constant by the electrolytic capacitors) plus the threshold voltage of the diodes. The current in the secondary winding stops flowing. At this point, the drain voltage of the MOSFET is not yet zero because C2609 between drain and source contains a certain charge. This charge will start a sine-shaped ringing together with the transformer's self-induction.
The oscillator will start a next cyclus which consists of the described three phases. The time of the different phases depends on the mains voltage and the load.
TimeDEAD is maximum at an input of 400VDC and minimum load, it will be zero at an input of 100VDC and overload.

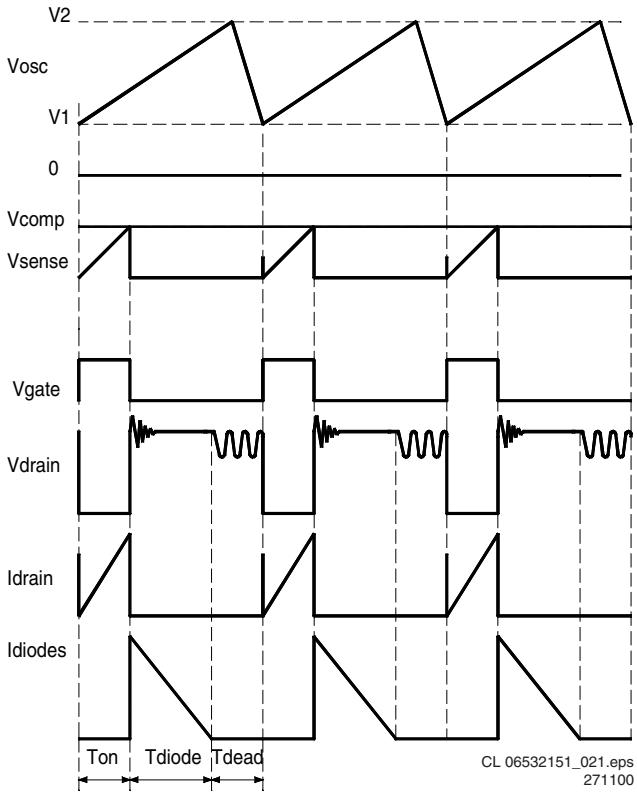


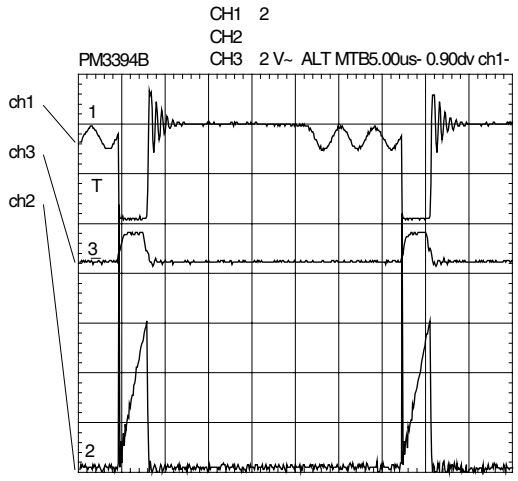
Figure 8-13

8.2.5 Regulation

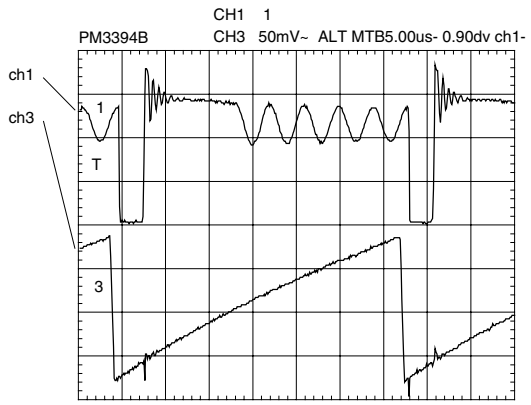
Figure 4 shows the most relevant signals during the regulation phase of the power supply.
The oscillator voltage ramps up and down between V1 and V2. The voltage at the current sense terminal is compared every cycle with the output of the error amplifier Vcomp. The output is switched off when the current sense level exceeds the level at the output of the error amplifier.
TimeON phase : A drain current will flow from the positive supply at pin 1 through the transformer's primary winding, the MOSFET and Rsense to ground. As the positive voltage at pin 1 of the transformer is constant, the current will increase linearly and create a ramp dependent on the mains voltage and the inductance of the primary winding. A certain amount of energy is stored in the transformer in the form of a magnetic field. The polarity of the voltages at the secundary windings is such that the diodes are non-conducting.
TimeDIODE phase : When the MOSFET is switched off, energy is no longer supplied to the tranformer. The inductance of the tranformer now tries to maintain the current which has been flowing through it at a constant level. The polarity of the voltage from the transformer therefore

8.2.6 Oscillograms

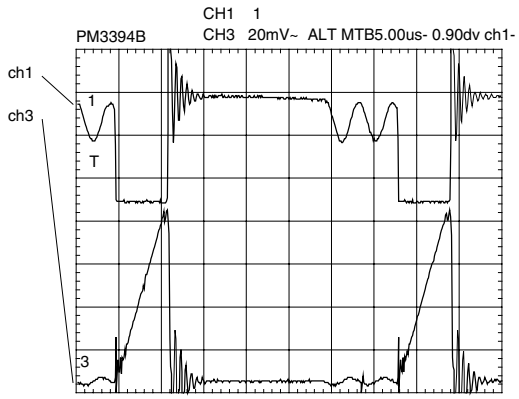
Oscillograms



ch1 : Drain voltage
ch2 : Drain current
ch3 : Gate voltage



ch1 : Drain voltage
ch2 : Oscillator voltage



ch1 : Drain voltage
ch3 : Sense voltage

CL 06532151_022.eps
301100

Figure 8-14

8.2.7 Circuit description

Input circuit
The input circuit consists of a lightning protection circuit and an EMI filter.
The lightning protection comprises R3120, gasarrestor 1125 and R3124.
The EMI filter is formed by C2120, L5120, C2125 and R3124. It prevents inflow of noise into/from the mains.

Primary rectifier/smoothing circuit
The AC input is rectified by rectifier bridge 6102 and smoothed into C2121. The voltage over C2121 is approximately 300V. It can vary from 100V to 390V.

Start circuit and Vcc supply
This circuit is formed by R3123, R3134, C2129, D6129, R3129, R3111, C2133 and C2111.
When the power plug is connected to the mains voltage, the stabilised voltage over D6129(24V) will charge C2133 via R3129. When the voltage reaches 14,5V across C2111, the control circuit of IC7110 is turned on and the regulation starts. During regulation, Vcc of IC7110 will be supplied by the rectified voltage from winding 7-9 via L5132, D6132 and C2133.

Control circuit
The control circuit exists of IC7110, C2102, C2104, C2107, C2109, C2110, R3102, R3103, R3104, R3107, R3108, R3109 and R3110. C2102 and R3110 define the frequency of the oscillator.

Power switch circuit
This circuit comprises MOSFET 7125, Rsense 3126, 3127 and 3128, R3125, C2127, L5125, R3112 and R3113. R3125 is a pull-down resistor to remove static charges from the gate of the MOSFET.

Regulation circuit
The regulation circuit comprises opto-coupler 7200 which isolates the error signal from the control IC on the primary side and a reference component 7201. The TL431(7201) can be represented by two components:
- a very stable and accurate reference diode
- a high gain amplifier

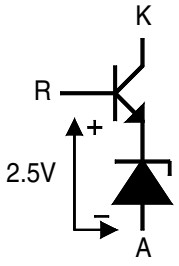


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Figure 8-15

TL431 will conduct from cathode to anode when the reference is higher than the internal reference voltage of about 2.5V. If the reference voltage is lower, the cathode current is almost zero.
The cathode current flows through the LED of the opto-coupler. The collector current of the opto-coupler flows through R3106, producing an error voltage, connected to voltage feedback pin 14 of IC7110.

Overvoltage protection circuit
This circuit consist of D6114, C2114, R3115and R3116.

When the regulation circuit is interrupted due to an error in the control loop, the regulated output voltage will increase (overvoltage). This overvoltage is sensed on the primary winding 7-9. When an overvoltage longer than 2.0µs is detected, the output is disabled until Vcc is removed and then re-applied. The power supply will come in a hiccup mode as long as the error in the control loop is present.

Secondary rectifier/smoothing circuit

There are 5 rectifier/smoothing circuits on the secondary side. Each voltage depends on the number of windings of the transformer.
The -8V supply is regulated by voltage regulator 7249.

On/off circuit

In off mode pin 1 and pin 2 of connector 0206 are connected. The high voltage (-8V, +12V) over opto coupler 7200 forces this one to conduct . IC 7110 is switched off

8.2.8 Troubleshooting PSU CDR3-ECO

Faultfinding diagram

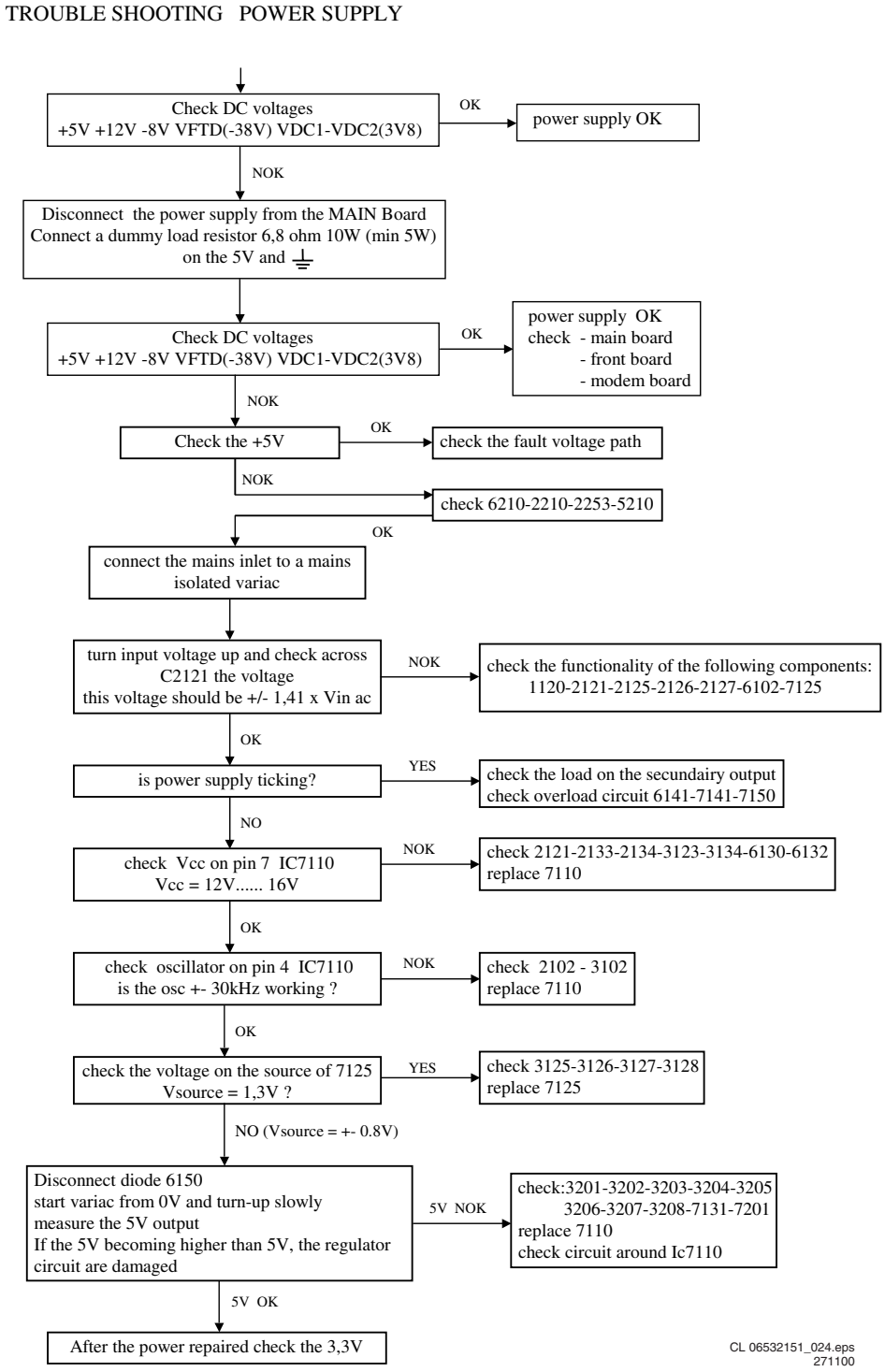

Figure 8-16

8.3 CD Main Board

The CD main board is built around the compact disc mechanism VAM1250 and a loader 1250. The CDM delivers diode signals and an unequalised high frequency signal. These signals are necessary inputs for the decoder CD10. Based on these signals the decoder will control the disc. The decoder is able to control the sledge, focus motor, radial motor and turn table. When everything is "locked", the decoder delivers a digital output according to IEC958 standard, subcode to the microprocessor and I2S for reproducing analog audio signals by means of a D/A converter.
The microprocessor controls the CD10 and is slave of the master processor on the CDR main board in the CDR779. Both processors communicate via a DSA connection (data, strobe and acknowledge).

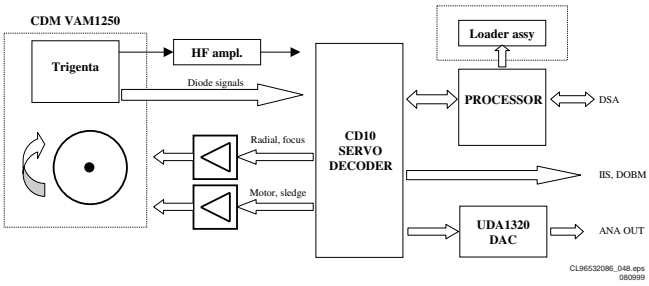

Figure 8-17

8.3.1 Supply Voltages

Description
The CD main board receives +5V and +12V from the CDR main board via respectively pin 16 and pin 15 of connector 1208. The +5V is split up into +5VHF and +5V. The +5VHF is used mainly for the diode currents and the HF-amplifier. The +5V is used for the digital part of the board. On the board a +3V3 is made from the +5V for the decoder CD10 and an A3V3 for the DAC UDA1320. The +12V is split up into A12V for the audio output stage and +12V for the power drivers of the CDM.

Measurements
Connect following supplies to next pins :

- +5V + 5% to pin 16 of connector 1208.
- +12V + 5% to pin 15 of connector 1208.
- Ground reference to pin 17 of connector 1208.

Keep microprocessor 7202 in reset by forcing pin 7 of connector 1208 to +5V. Check the following voltages :

Point	Voltage
Position 1000 pins 1,3	+5V ± 5%
Position 7000 pins 5,17,21,57	+3.3V ± 5%
Position 7005 pin 14	+5V ± 5%
Position 7020 pins 25	+5V ± 5%
Position 7020 pins 26,27,28	+10 ± 10%
Position 7021 pin 5	+12V ±10
Position 7022 pin 5	+12V ±10
Position 7025 pin 16	+5V ± 5%
Position 7202 pin 38	+5V ± 5% (other appl. 3V3 possible)
Position 7309 pins 4,13	+3V3 ± 5%
Position 7120 pin 8	+12V ± 10

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Figure 8-18

8.3.2 Clock Signals

Description
The microprocessor has its own Xtal or resonator of 12MHz. The CD10 needs a clock of 8.4672MHz + 100ppm. This speed also relates to the disc speed. To avoid locking problems between the two drives in the CDR779, both drives run on the same clock. Therefore the CD main board gets the clock for the decoder from the CDR main board via pin 2 of connector 1208.
The DAC needs a system clock to drive its internal digital filters and to clock the I2S signals from the decoder. In our case this is 11.2896MHz (CL11) generated by the CD10.

Measurements
- Connect the power supply as described above in "1.1.1. Supply Voltages".
- Connect on pin 2 of position 1208 a clock signal of 8.4672 MHz (100ppm minimum rise time of 50ns and at TTL level (0V and +5V).
- Keep microprocessor 7202 in reset by forcing pin 7 at position 1208 to +5V.
- Release the reset. Now, the processor will reset the CD10 for at least 75µs.
- The output clock CL11 should be available now at pin 42 of the CD10.

Check the following frequencies :

Point	Frequency
Position 7000 pin 16	8.4672 MHz ± 100ppm
Position 7202 pins 14,15	12MHz ± 5%
Position 7309 pin 6	11.2896 MHz ± 100ppm
Position 7309 pin 1	2.1168 MHz ± 100ppm
Position 7309 pin2	44.1kHz ± 100ppm

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Figure 8-19

8.3.3 CD10 Decoder/Servo SAA7324 (7000)

Description
The CD10 is a single chip combining the functions of a CD decoder, digital servo and bitstream DAC. The decoder/ servo part is based on the CD7. The decoding part supports a full audio specification and can operate at single speed (n=1) and double speed (n=2).

Block Diagram

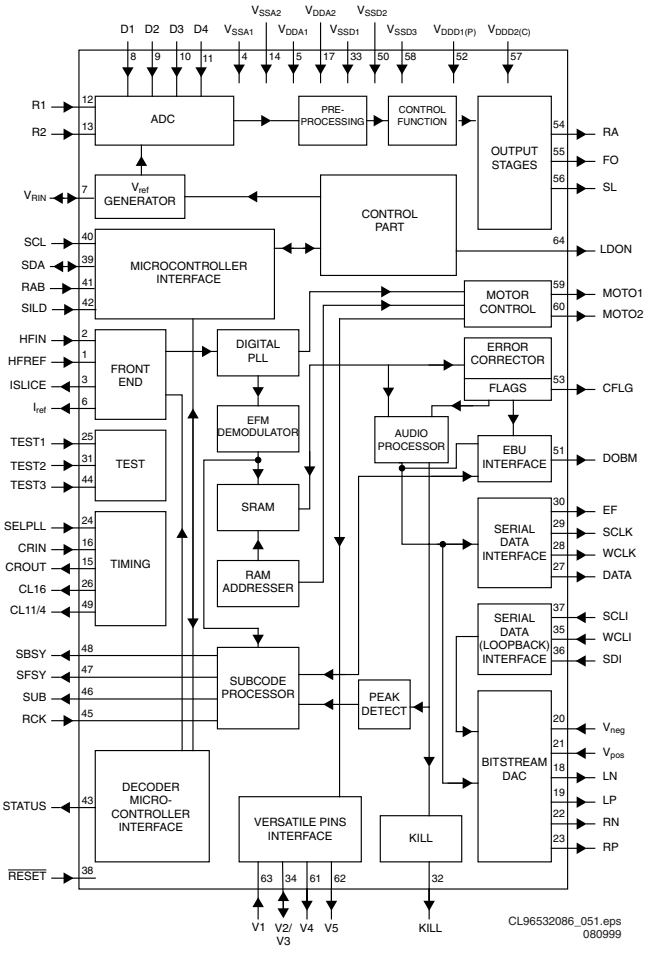

Figure 8-20

Pin Configuration

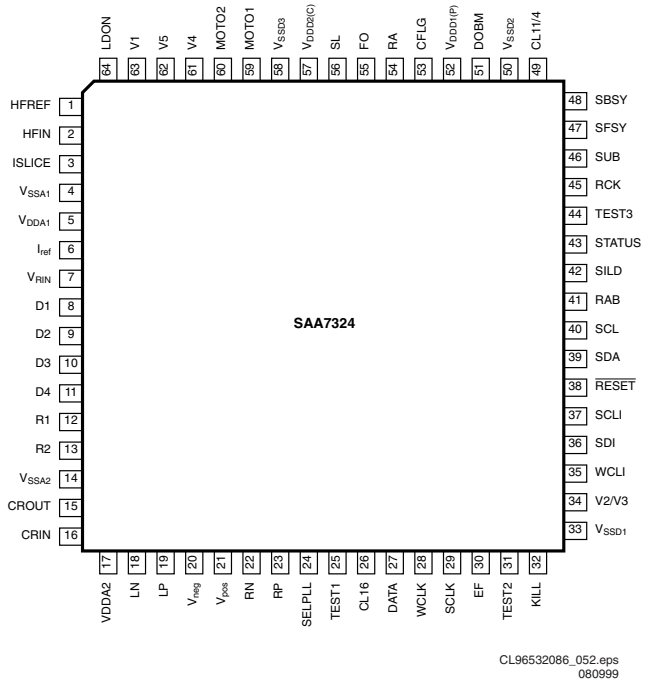

Figure 8-21

8.3.4 TDA7073A Power Drivers (7021, 7022)

Description

The TDA7073A is a dual power driver circuit for servo systems with a single supply. In this configuration it is used to drive the sledge, tray, focus and radial.

Measurements

Keep microprocessor 7202 in reset by forcing pin 7 of connector 1208 to +5V. Connect the power supply as described above in "1.1.1. Supply Voltages". Check the following voltages :

Pin	Location	Value
5	7021	12V ± 10%
5	7022	12V ± 10%
1	7022	1.65V ± 10%
2	7022	1.65V ± 10%
6	7022	1.65V ± 10%
7	7022	1.65V ± 10%
1	7021	5.0 ± 10%
2	7021	5.0 ± 10%
6	7021	1.65V ± 10%
7	7021	1.65V ± 10%

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Figure 8-22

Pin	Location		Value DC
9	7022	FOC	5.8V ± 10%
12	7022	FOC	5.8V
13	7022	RAD	5.8V
16	7022	RAD	5.8V
9	7021	SLE	5.8V
12	7021	SLE	5.8V
13	7021	TRAY-	5.8V
16	7021	TRAY+	5.8V

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Figure 8-23

8.3.5 BA6856FP Turn Table Motor Driver (7020)

Description

This component is a 3 phase, full wave pseudo linear driving system with inbuilt Hall Bias circuit and 3 phase parallel output.

Measurements

Keep processor 7202 in reset by forcing pin 7 of connector 1208 to +5V. The outputs 9, 10, 11 of connector 1006 are 0V.
Pin 21 of the motor driver 7020 is 2.5V (10%.
Pin 22 of the motor driver 7020 is 2.5V (10%.
Pin 23 of the motor driver 7020 is 0V.
Pin 19 of the motor driver 7020 is 5V (10%.
Put the processor out of reset to continue the measurement.
Check MOT1 at pin 59 of CD10. The duty cycle of the output should be 50%. Check wave form at pin 11 of 7005-D : amplitude 5V + 5% duty cycle 50%.
The motor driver 7020 can be measured dynamically by connecting a hall motor to the application panel. Apply a pulse of 1V 10Hz and 15% duty cycle to pin 22 (Ec) as input value with reference to pin 21 (Ecr=2.5V). Measure the output signals on the driver. This will give as response a square wave on pin 17 and pin 18. When a positive voltage

is applied, the square wave on pin 17 will go ahead of the square wave on pin 18.

All signals will have a value as shown in the truth table. Check the following output signals :

Motor controller truth table

Input conditions conn 1006 pin						Outputs conn 1006			Test points on driver		
6	8	4	7	3	2	9	10	11	18	17	16
U+	U-	V+	V-	W+	W-	UCOIL	VCOIL	WCOIL	HALL_U	HALL_V	HALL_W
L	M	H	M	M	M	6V	0V	0V	0V	5V	
H	M	L	M	M	M	0V	6V	6V	5V	0V	
M	M	L	M	H	M	0V	6V	0V		0V	5V
M	M	H	M	L	M	6V	0V	6V		5V	0V
H	M	M	M	L	M	0V	0V	6V	5V		0V
L	M	M	M	H	M	6V	6V	0V	0V		5V

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Figure 8-24

Hall-elements input signal voltage levels

Input voltage	Level	Tolerance	Unit
H	2.8	0.1	V
M	2.5	0.1	V
L	2.2	0.1	V

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Figure 8-25

8.3.6 Tray Control

Description

The tray control consists of a TDA7073A power driver (7021) controlled by the processor 7202 via pin 19 TRAYIN and pin 20 TRAYOUT. If pin 20 is low and pin 19 high, the TRAY+ signal at pin 16 of 7021 is forced to +8V and the TRAY- signal at pin 13 of 7021 to GND : the tray will open. If pin 20 is high and pin 19 low, TRAY+ becomes GND and TRAY- becomes +8V : the tray will close. If pin 19 and 20 of the processor have the same value, TRAY+ and TRAY- will have the same value as well : the tray stops moving.

Measurements

Keep procesor 7202 in reset by forcing pin 7 of connector 1208 to +5V. Connect a load of 15Ω, 7W between pin 3 and 4 of connector 1002. Check the voltage over the load with TRAY+ (pin 3) as positive reference. Check also the levels of pins 19 and 20 of the processor.
U TRAY+,TRAY- = <100mV
Pin 20 = +5V
Pin 19 = +5V
Force pin 20 of the processor to ground, and check the voltages.
U TRAY+,TRAY- = -6.5V(10%
Pin 20 = +0V
Pin 19 = +5V
Force pin 19 of the processor to ground as well and check the levels again.
U TRAY+,TRAY- = <100mV
Pin 20 = +0V
Pin 19 = +0V
Release pin 20 of the processor and check the levels.
U TRAY+,TRAY- = 6.5V(10%
Pin 20 = +5V
Pin 19 = +0V
Release pin 19 of the processor and check the levels again:
U TRAY+,TRAY- = <100mV
Pin 20 = +5V
Pin 19 = +5V

8.3.7 HF Path

Description

The pre-amplified HF-signal is presented to both n=1 and n=2 amplifier circuits. The mux/demux switches via software and micro processor controlled S1 and S2 lines between either one of the amplified n=1 or n=2 signals. The signal will then follow another amplification and filtering circuit. The filtering again is controlled by the S1 and S2 lines, dependant on whether the disc starts up (speed n=1, S1 and S2 Low), disc plays at speed n=1 (S1 Low, S2 High) or disc plays at speed n=2 (S1 and S2 High).

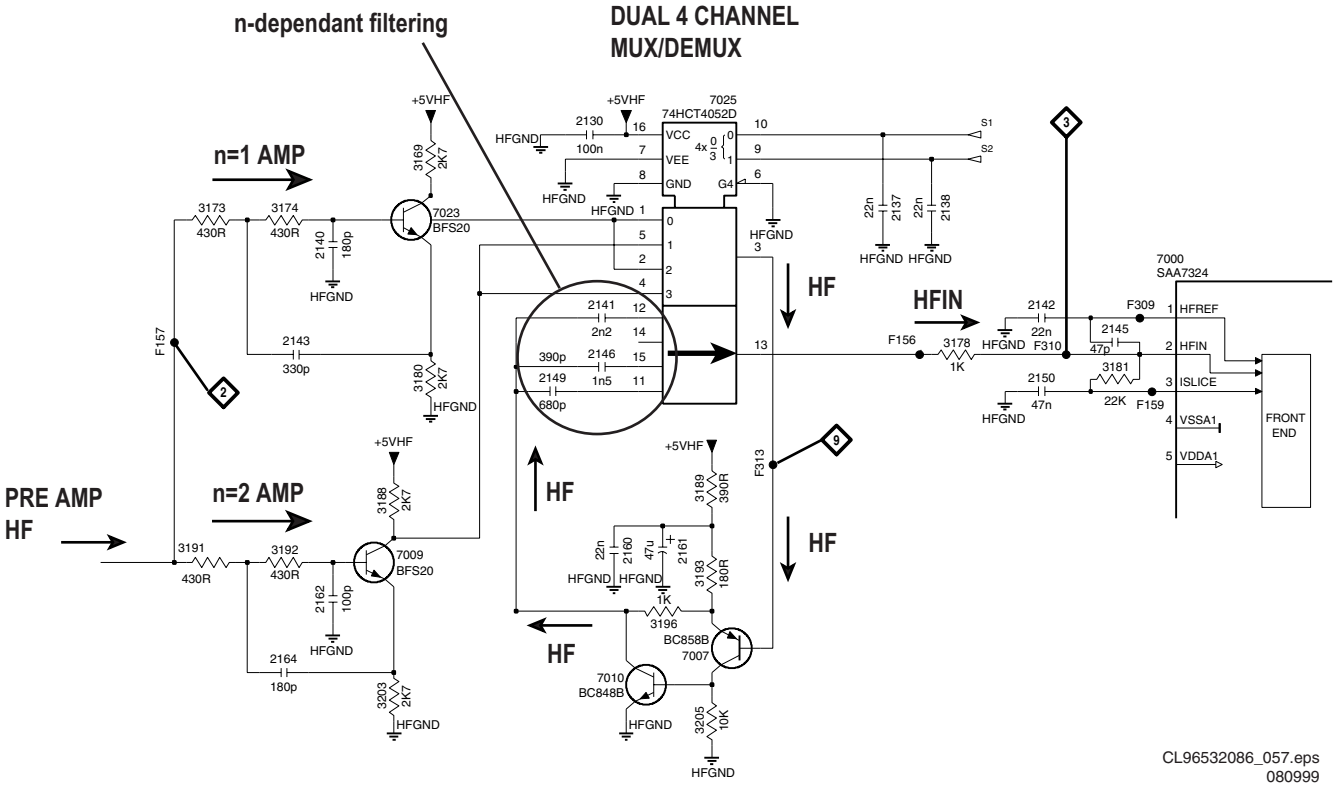

Figure 8-26

DC Settings

Set the power and reset connections as described above in "1.1.1. Supply Voltages". Check the following voltages :

Force	Pin	Location	Measure
	Emitter	7006	2.4 ± 10%
S1 and S2 “HIGH”	Collector	7010	1.9 ± 10%
S1 and S2 “LOW”	Collector	7010	1.9 ± 10%
S1 and S2 “HIGH”	13	7025	1.6 ± 10%
S1 and S2 “LOW”	13	7025	1.6 ± 10%
S1 and S2 “HIGH”	3	7025	3.2 ± 10%
S1 and S2 “LOW”	3	7025	3.2 ± 10%

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Figure 8-27

Transfer Characteristics
Set the power and reset connections as described above in "1.1.1. Supply Voltages". Connect a function generator via a serial resistor of 1k5 to pin 4 of connector 1000. Use the function generator as a sine wave generator with output level of 1Vtt. Check this AC value with an AC mV-meter connected to the input (pin 2) of the CD10 (7000) :

Frequencies	S1 and S2 "low"		S1 and S2 "high"	
	Input V_{AC}	Pin 2 at 7000	Input V_{AC}	Pin 2 at 7000
300 Hz	200mV	< 100mV ± 20%	200mV	< 100mV ± 20%
10 kHz	200mV	295mV ± 20%	200mV	330mV ± 20%
100 kHz	200mV	310 mV ± 20%	200mV	330 mV ± 20%
300 kHz	200mV	385 mV ± 20%	200mV	335 mV ± 20%
800 kHz	200mV	655 mV ± 20%	200mV	485 mV ± 20%
1.5 MHz	200mV	1.1V ± 20%	200mV	760 mV ± 20%
3MHz	200mV	1.1V ± 20%	200mV	1.1V ± 20%

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Figure 8-28

HFDET Setting
Set the power and reset connections as described above in "1.1.1. Supply Voltages". Connect a function generator via a serial resistor of 1k5 to pin 4 of connector 1000. Use the function generator as a sine wave generator with output level of 500 kHz, 1Vtt. Check this AC value with an AC mV-meter :

Location	Voltage DC		Voltage AC
	No HF	HF	
F190	4.8V± 20%	4.8V± 20%	175mV± 20%
F192	< 100mV	1.1V± 20%	-
F206	4.9V± 20%	150mV± 20%	-

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Figure 8-29

8.3.8 Audio Part - DAC

Description
The DAC used, is the UDA1320 bit stream, continuous calibration. I2S signals from various formats can be entered at pins 1,2 and 3. If these signals are in phase with the delivered system clock at pin 6, the DAC will reproduce analog output signals at pins 14 and 16. 0dB level is 0.85Vrms. These analog signals are at 1.65Vdc level.
The DAC has features which can be checked on the input pins. Mute will switch off the analog signals. De-emphasis is not used, since this is done in the decoder. Attenuation of -12dB is not used because this is also done in the decoder.

I2S
I2S is a kind of digital audio format, consisting out of 3 lines : CLOCK, WORDSELECT and DATA.

WORD-SELECT
Word select (WS) indicates whether the data-sample is from the left or the right audio-channel. It has the same frequency as the sample rate of the digital audio signal. This can be 32, 44.1 or 48kHz. Normal polarity is low for a left sample and high for a right sample. So within the low state of the WS-line the data bits for the left channel are transferred, and within the high state the data bits of the right channel are transferred.

CLOCK
The CLOCK signal (CLK) indicates when DataTips must be set, and when DataTips must be read. The frequency depends on the speed of the I2S-bus, but is always a factor of the frequency of the WS-signal. It can be 48x, 64x, 96, 128x... .In our case it is 48x the sample rate frequency = 2.1168MHz. The signal is in phase with the WS-signal.
Transition of the WS always happens on a falling edge of the CLK.

DATA
DATA contains all data-bits. Data bits are set by the transmitting device, and read by the receiving device. The position of the DATA-bits within the WS-signal is very important. There are several formats for this. In our case we always use Philips I2S format, no Japanese or Sony format. The number of data-bits per channel depends on the used devices.

Timing of the I2S-bus, in case of Philips I2S is shown in the next figure :

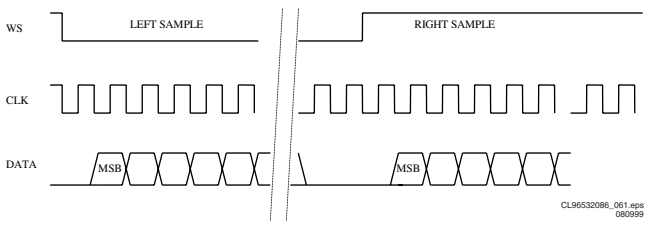

Figure 8-30

Measurements

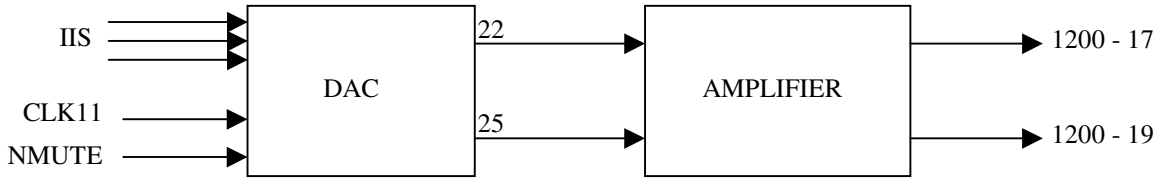

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Figure 8-31

Keep processor 7202 in reset by forcing pin 7 of connector 1208 to +5V. This puts the processor outputs in tristate.
Check the reset at pin 4 of processor 7202 to make sure that the processor is in reset.
Now, force port 0-4 pin 33 at 7202 to 0V to set the decoder outputs (SCLK, WCLK, DATA, and CL11).
Check the MUTE pin 11 at 7309 : this pin should be low.
Connect via an I2S generator I2S-signals to the DAC :
Pin 1 at 7309: SLCK.
Pin 2 at 7309: WCLK.
Pin 3 at 7309: DATA.
Connect also the SYSCLK pin 6 at position 7309 to a clock signal of 11.2896 MHz (100ppm.
Generate an I2S signal equivalent with a sine wave of 1kHz at 0dB for both left and right channels.
Check if 0.8 VRMS at pins 14 and 16 at location 7209 with a DC of 1.65VDC.
Check if 1.7 VRMS (2 dB at connector pins 1and 3 at location 1209.
Force MUTE Pin 11 at 7309 high.
Measure again at pins 1 and 3 at location 1209 : both signals should be at -90 dB.

9. List of Abbreviations

SIGNAL NAME	SIGNAL FLOW	FUNCTION AND DESCRIPTION
+12V	main supply voltage from PSU	+12V supply voltage from PSU
+12VA	supply voltage	+12V supply voltage for Audio part
+5V	main supply voltage from PSU	+5V supply voltage from PSU
+5VA	supply voltage	+5V supply voltage for Audio part
+9SRVPWR	IC7558 ->- IC7240	PoWeR supply for SeRVo driver IC
12VPWR	supply voltage	+12V supply voltage for servo part
-8V	main supply voltage from PSU	-8V supply voltage from PSU
-8VA	supply voltage	-8V supply voltage for Audio part
A(1:20)	IC7701 -> R3818,R3819, R3820, R3821, R3897 -> IC7703	Address lines 1 to 20 between DASP and flash ROM
A(10:20)	IC7701 -> R3819, R3820, R3821 -> IC7702	Address lines 10 to 20 between DASP and DRAM
A1	IC7010 -> IC7270	amplitude of the “land” reflection relative to the average EFM, voltage output, OPC input
A1LF, A2LF	CONN1000 -> IC7010	satellite photo diodes A1, A2 current output
A2	IC7010 -> IC7270	amplitude of the “pit” reflection relative to the average EFM, voltage output, OPC input
A-8V	supply voltage	-8V supply voltage for servo part
AEGER		Analog Error signal GEnerator for Recordable
AINTON	IC7008 -> IC7010	Alpha INTegrator ON (to AEGER)
ALE	IC7270 -> R3213 -> IC7209, IC7300IC7270 -> R3230	Address Latch Enable; external address latch strobe line, freeze address when low
ALPHA0	IC7270 -> IC7010	analog voltage mode output from OPC D/A converter
ALS	IC7008 -> IC7010	Alpha Loop Switch (to AEGER)
ASTROBE	IC7008 -> IC7010	Alpha STROBE (to AEGER)
ATIP		Absolute Time In Pre-groove (sync signal)
ATIPSYNC	IC7300 -> IC7270	ATIP SYNC signal
ATT	IC7270 -> R3717, R3722IC7270 -> IC7701	ATTenuation request from MACE2 to audio DAC, active low; means that the output can be attenuated in case of search activities
B1LF, B2LF	CONN1000 -> IC7010	satellite photo diodes B1, B2 current output
BCLK	IC7701 -> R3898A -> IC7300	I2S1 BitCLocK from DASP to CDR60 (playback and record)
BE_RESET	IC7701 -> R3261 -> IC7270IC7701 -> R3716	Basic Engine RESET, active high
BIASC	IC7008 -> R3056	BIAS Current switch CDRW output
BKPT	CONN1819, R3907 -> IC7701	JTAG mode select / debug mode BreaKPoinT
C1LF, .. , C4LF	CONN1000 -> IC7010	Central photo diodes C1, C2, C3, C4 current output
CAGAIN	R3016,R3115 -> IC7010	set-point laser power on disc, current input
CAHF	CONN1000 -> C2374	Central Aperture (central photo diodes) High Frequency current output (C1+C2+C3+C4)
CALF	IC7010 -> IC7270	Central Aperture (central photo diodes) Low-pass Filtered signal (DC coupled EFM signal), voltage output, OPC input
CAS0	IC7701 -> IC7702	Column Address Strobe DRAM for upper byte
CAS1	IC7701 -> IC7702	Column Address Strobe DRAM for lower byte
CDR	IC7008 -> IC7355	CDR strategy detected output (active high)
CDR60CFLG	IC7300 -> R3382B -> CONN1812	serial output of error corrector status information of the CDR60-decoder, to be measured at test connector
CDR60CL1	IC7300 -> R3382C -> CONN1812	output of CLock signal for testing system clock of IC CDR60 at test connector
CDR60CS	IC7270 -> R3235B -> R3702, IC7300	CDR60 Chip Select, active high
CDR60INT	IC7300 -> IC7270	CDR60 INTerrupt line, active low
CDR60LWRT	IC7300 -> R3048	CDR60 Laser WRiTe control output
CDR60MEAS1	IC7300 -> R3382A -> CONN1812	serial output of information about jitter, PLL frequency and asymmetry of bit recovery block in CDR60, to be measured at test connector

CDR60PLL	IC7270 -> R3305 -> IC7300	CDR60 clock multiplier enable, active high
CDRW	IC7355D -> IC7355CIC7355D -> CONN1000	inverted CDR-strategy-detected signal
CLK_OUT	IC7701 -> R3771 -> CONN1819	system CLocK OUT
CLK_SYS	IC7701 -> R3727, R3731	oscillator output
COS-	CONN1220 -> IC7225B	Hall feedback signal from sledge motor
COS+	CONN1220 -> IC7225B	Hall feedback signal from sledge motor
CSFLASH	IC7701 -> IC7703	Chip Select for FLASH or boot device
CSRAM	IC7270 -> R3235A -> R3703, IC7802	Chip Select SRAM, active low
D(16:31)	IC7701 <-> R3822, R3823, R3824, R3825 <-> IC7703, IC7702	Databus bit 16 to 31 between DASP, flash ROM and DRAM
D3V3	supply voltage	+3,3V supply voltage for Digital part
D5V	supply voltage	+5V supply voltage for Digital part
D5VS	supply voltage	+5V supply voltage for Servo part
DALPHA	IC7010 -> R3037	ALPHA error signal for laser power control
DASP		Digital Audio Signal Processor
DATAI	IC7701 -> R3898C -> IC7300	I2S1 DATA In from DASP to CDR60 (recording)
DATAO	IC7300 -> R3314 -> IC7701	I2S1 DATA Out from CDR60 to DASP (playback)
DEEMP	IC7270 -> R3719, R3724IC7270 -> IC7701	DE-EMphasis control for audio DAC from MACE2, active high; means that de-emphasis is needed in digital filter
DELTAP	IC7016 -> R3126	DELTA Power current source drive signal from XDAC
DIG_OUT_C	IC7701 -> R3706 -> C2707, CONN1400	Common DIGital OUTput (consumer)
DISPLAY_INT	F934 -> R3812, IC7701	DISPLAY INTerrupt
DMON	IC7270 -> R3324	power save at stop, active low
DOBM_CD	CONN1708, C2731 -> R3757 -> R3903 -> IC7701	Digital Output (EBU output) from CD player in CDR779 to DASP
DOBM_CDR	IC7300 -> R3382D -> C2379, IC7701	Digital Output (EBU output) from CDR60 to DASP
DRAM_RW	IC7701 -> IC7702	Read/Write strobe for DRAM
DSA_ACK_CD	IC7701 <-> R3830 <-> R3831 <-> CONN1708IC7701 <-> R3830 <-> C2735	Data/Strobe/Acknowledge serial communication between DASP and CD-player in CDR779
DSA_ACK_CDR	IC7701 -> R3729 -> IC7270, CONN1830IC7701 -> R3729 -> R3769	Data/Strobe/Acknowledge serial communication between MACE2 and DASP for CDR; acknowledge input for MACE2 is strobe output for DASP
DSA_DATA_CD	IC7701 <-> R3828 <-> R3829 <-> CONN1708IC7701 <-> R3828 <-> C2733	Data/Strobe/Acknowledge serial communication between DASP and CD-player in CDR779
DSA_DATA_CDR	IC7270<->R3246 <-> R3813 <-> IC7701, CONN1830IC7270<->R3246 <-> R3767	Data/Strobe/Acknowledge serial communication between MACE2 and DASP for CDR
DSA_STR_CD	IC7701 <-> R3835 <-> R3832 <-> CONN1708IC7701 <-> R3835 <->C2734	Data/Strobe/Acknowledge serial communication between DASP and CD-player in CDR779
DSA_STR_CDR	IC7270 -> R3245 -> IC7701, CONN1830IC7270 -> R3245 -> R3768	Data/Strobe/Acknowledge serial communication between MACE2 and DASP for CDR (strobe output for MACE2 is acknowledge input for DASP)
DSCLK	CONN1819, R3908 -> IC7701	reset in / Debug Serial CLocK in
DSI	CONN1819, R3909 -> IC7701	JTAG reset in / Debug Serial clock In
EFM		Eight to Fourteen Modulation = modulation method used for CD storage, also the actual raw CD signal as written or read on or from the CD disc
EFMCLK	IC7300 -> IC7008	EFM CLocK output
EFMDATA	IC7300 -> IC7008	EFM DATA output
EFMTIM3		EFM TIMing generator
EPON	IC7008 -> R3010IC7008 -> C2010	Erase Power ON
EPONO	IC7008 -> R3107	Erase Power ON Open drain output
EPONRC	R3004 -> CONN1000	Erase Power ON (after RC circuit)
ERASEC	IC7008 -> R3087	ERASE Current switch CDRW output
ERON	IC7008 -> IC 7010	ERror ON (to AEGER)
EXT_DIG_IN1	CONN1400 -> IC7701	EXTernal DIGital INput 1

EXT_DIG_IN2	CONN1702, C2767, C2721 -> R3701 ->IC7701	EXTernal DIGital INput 2 (CDR779 only)
EXT_OPT_IN	CONN1400, C2722 -> R3708 -> IC7701	EXTernal OPTical INput
F_READY	IC7703 -> R3817 -> IC7701CONN1701 -> IC7701	Flash READY detection, this line is forced low as long as the flash is busy with erase or program algorithm
F_RW	IC7701 -> IC7708B	Read/Write strobe for Flash ROM
FEN	IC7010 -> IC7270	Focus Error Normalized current output
FOC-	IC7240 -> CONN1000	FOCus actuator drive signal negative connection
FOC+	IC7240 -> CONN1000	FOCus actuator drive signal positive connection
FS30V	D6500 -> CONN1000	Forward Sense diode 30V power supply
FSA	CONN1000 -> T7119, T7120	Forward Sense photo diode current output
FSCLR	IC7008 -> IC7126	Forward Sense signals CLeaR switch
FSOF	IC7008 -> R3052	Forward Sense photo diode sampling OFf
FSON	IC7008 -> R3051	Forward Sense photo diode sampling ON
FSR	R3040 -> IC7270	Forward Sense signal while Reading for read control loop
FSRS	IC7008 -> IC7126D	Forward Sense photo diode Read Sampling
FSW	R3050 -> IC7270	Forward Sense signal while Writing for write control loop
FSWS	IC7008 -> IC7126C	Forward Sense photo diode Write Sampling
FWEN	IC7270 -> IC7208, R3806	Flash EPROM Write ENable
HALL_U, HALL_V, HALL_W	IC7330 -> IC7300, CONN1812	HALL feedback signals from turn table motor via hall motor driver
HFS0	IC7270 -> R3249 -> IC7360	select HF circuit
I2C		Inter IC
I2C_CLK	IC7701, R3711 -> R3715 -> C2709 -> F934IC7701, R3711 -> IC7801	I2C CLocK line used for display slave processor and digital potmeter
I2C_DATA	IC7701, R3712 <-> R3713 <-> C2708, R3714 <-> F934IC7701, R3712 <-> IC7801	I2C DATA line used for display slave processor and digital potmeter
I2CL	R3248B -> IC7207, R3247C	I2C CLock line
I2CSCL	IC7207 -> IC7008IC7207 -> IC7010IC7207 -> R3248B	I2C Serial CLock line
I2CSDA	IC7207 <-> IC7008IC7207 <-> IC7010IC7207 <-> R3248A	I2C Serial DAta line
I2DA	R3248A <-> IC7270,R3247D	I2C DAta line
I2S_BCLK_AI	IC7701 -> R3814 -> IC7406	I2S4 Bit CLocK for CODEC (ADC for CDR779) Analog Input (record from analog source)
I2S_BCLK_AO	IC7701 -> R3894A -> IC7406	I2S2 Bit CLocK for CODEC (DAC for CDR779) Analog Output
I2S_BCLK_CD	CONN1708, C2739 -> R3834 -> IC7701	I2S3 Bit CLocK from CD player (record n=2) (CDR779 only)
I2S_BCLK_MIC	CONN1708, C2739 -> R3834 -> IC7701	I2S3 Bit CLocK from MICrophone (CDR779 only)
I2S_DATA_AI	IC7406 -> IC7701	I2S4 DATA from CODEC (ADC for CDR779) Analog Input (record from analog source)
I2S_DATA_AO	IC7701 -> R3894C -> IC7406	I2S2 DATA for CODEC (DAC for CDR779) Analog Output
I2S_DATA_CD	CONN1708, C2738 -> R3836 -> IC7701	I2S3 DATA from CD player (record n=2) (CDR779 only)
I2S_DATA_MIC	CONN1708, C2738 -> R3836 -> IC7701	I2S3 DATA from MICrophone (CDR779 only)
I2S_WS_AI	IC7701 -> R3743 -> IC7406	I2S4 Word CLocK for CODEC (ADC for CDR779) Analog Input (record from analog source)
I2S_WS_AO	IC7701 -> R3894B -> IC7406	I2S2 Word CLocK for CODEC (DAC for CDR779) Analog Output
I2S_WS_CD	CONN1708, C2740 -> R3833 -> IC7701	I2S3 Word CLocK from CD player (record n=2) (CDR779 only)
I2S_WS_MIC	CONN1708, C2740 -> R3833 -> IC7701	I2S3 Word CLocK from MICrophone (CDR779 only)
I2S1_MS	IC7270 -> R3910, IC7701	I2S1 Master-Slave interrupt from MACE2
IE	T7121 -> CONN1000	laser Erase drive current signal
INT_COPY_ANA	IC7701 -> R3721 -> IC7401IC7701 -> R3721 -> R3410	select INTernal COPY ANAlog (in case of copy protected disc or track on CD drive) (CDR779 only)
IR	T7135 -> CONN1000T7135 -> R3056T7135 -> IC7008	laser Read drive current signal
IW	T7122 -> CONN1000T7122 -> D6003	laser Write drive current signal

KEY_PRESSED	IC7706B -> R3816 -> IC7701	KEY PRESSED interrupt
KILL	T7560, T7561, R3560 -> CONN1400, R3424, R3428	KILL signal from power supply part to audio outputs
KILL_OUT	IC7701 -> R3532	disables the KILL activity from the PSU; 1 = no kill,0 = kill active
L12V	supply voltage	+12V supply voltage for servo/Laser part
L3_CLK	IC7701 -> R3725 -> IC7406	L3 interface CLocK line / control CODEC (not for CDR779)
L3_DATA	IC7701 <-> R3728 <-> IC7406	L3 interface DATA line with CODEC (not for CDR779)
L3_MODE	IC7701 -> R3735 -> IC7406	L3 interface MODE line selects data or address transfer mode for CODEC (not for CDR779)
L5V	supply voltage	+5V supply voltage for servo/Laser part
L-5V	supply voltage	-5V supply voltage for servo/Laser part
LASCK	IC7270 <-> R3248D	ClocK line DAC LASer control
LASDACCK	R3248D <-> IC7016	ClocK line DAC LASer control
LASDACDI	R3248C <-> IC7016	Data line DAC LASer control
LASDACLD	R3212 <-> IC7016	LoaD line DAC LASer control
LASDD	IC7270 <-> R3248C	Data line DAC LASer control
LASLD	IC7270 <-> R3238 <-> R3212IC7270 <-> R3232	LoaD line DAC LASer control
LEFT	CONN1708, C2743 -> IC7401C, IC7407C	audio output LEFT channel from CD-player in CDR779
LLP	IC7270 -> IC7300	Laser Low Power (active high), switches the laser from write to read power whenever the device tends to go offtrack
LWRT	R3048 -> IC7008	Laser WRiTe control input
MA(16:17)	IC7270 <-> IC7208	bank switch higher address lines
MA(8:15)	IC7270 <-> IC7802 <-> IC7208	address bus high byte
MACE2		Mini All Cd Engine (minus decoder + OPC + PCS + extra RAM)
MAD(0:7)	IC7270 <-> IC7209 <-> IC7802 <-> IC7208 <-> IC7300	bi-directional data bus / address bus low byte
MIRN	IC7010 -> IC7270	MIRror Normalized (disc reflection) current output
MOTO1	IC7300 -> IC7355A	turn table MOTOr control output
MRDN	IC7270 -> R3276 -> R3242A, IC7802, IC7300	Master ReaD, read strobe for external peripherals, active low
MUTE	IC7270 -> R3718, R3723IC7270 -> IC7701	MUTE control from MACE2 to DASP, active low
MWRN	IC7270 -> R3280 -> R3242B, IC7802, IC7300	Master WRite, write strobe for external peripherals, active low
NMUTE	IC7701 -> R3726, IC7406	MUTE output, low active
OFFTRACK	IC7270 -> IC7300	OFFTRACK detection flag
OPC		Optimum Power Calibration
P12VKILL	supply voltage	+12V supply voltage for KILL-circuit
PCS		Position Control Sledge
PCSCOS	IC7225B, C2229 -> IC7270, CONN1812	Position Control Sledge COS feedback signal
PCSSIN	IC7225A, C2227 -> IC7270, CONN1812	Position Control Sledge SIN feedback signal
PDAR		Photo Diode Amplifier Recordable
PERASE	R3036, R3031, R3030, R3029, R3028, R3027, R3020 -> IC7002C, R3043, T7113	laser Power switch for ERASE
POWER_UP	IC7270 -> R3243C,R3556, R3538	standby pin, high level activates essential powers necessary for full function; overrules HI_POWER setting
PPN	IC7010 -> IC7050C	Push-Pull signal, Normalized, balanced, voltage output
PRCOARSE	IC7016 -> R3057	drive signal from Power Read COARSE DAC for read current source
PRFINE	IC7016 -> R3058	drive signal from Power Read FINE DAC for read current source
PROF_EBU	IC7701 -> CONN1820	PROFessional digital output (CDR779 only)
PSENn	IC7270 -> R3260 -> IC7208IC7270 -> R3231	Program Store ENable; external ROM output enable line, active low
PW	R3081 -> IC7008	Write Power signal to OPC input of MACE2

PWB	IC7001C -> IC7016	drive signal to XDAC<->s for write and erase current sources and VCAGAIN
PWD	IC7016 -> IC7002BIC7016 -> IC7002C	drive signal from XDAC for write and erase current sources
PWMAX	IC7016 -> R3073	PW MAXimum signal from DAC used for determining set point for laser power during writing
PWMIN	IC7016 -> R3072	PW MINimum signal from DAC used for determining set point for laser power during writing
PWRITE	R3035, R3026, R3025, R3024, R3023, R3022, R3021 -> IC7002B, R3044, T7124	laser Power switch for WRITE
RAD-	IC7240 -> CONN1000	Radial actuator drive signal negative connection
RAD+	IC7240 -> CONN1000	Radial actuator drive signal positive connection
RAS0	IC7701 -> IC7702	Row Address Strobe DRAM
RCK	IC7300 -> R3319 -> IC7701	EIAJ subcode clock from CDR60 to DASP (CD text interface)
RDGAIN1	IC7008 -> R3054	forward sense ReaD GAIN switch 1
RDGAIN2	IC7008 -> C2027	forward sense ReaD GAIN switch 2
RDGAIN3	IC7008 -> C2060	forward sense ReaD GAIN switch 3
RE	IC7010 -> IC7215A	Radial Error signal for fast track counting, voltage output
RECORDING	IC7008 -> IC7010IC7008 -> CONN1000IC7008 -> IC7355C	RECORDING output (active high)
REN	IC7010 -> IC7270	Radial Error Normalized current output
RIGHT	CONN1708, C2742 -> IC7401A, IC7407A	audio output RIGHT channel from CD-player in CDR779
RXD_TOOL	CONN1818 -> IC7701	Receive of UART for test TOOL
S1V65	Referenve Voltage	1.65V delivered by IC7215B for Servo part
S2V9	Reference Voltage	2.9V delivered by IC7010 for Servo part
SEL_HP_OUT	IC7701 -> R3720 -> IC7407	SELect HeadPhone OUTput in DJ-mode (for CDR779 only)
SFSY	IC7701 -> R3756 -> IC7300	EIAJ subcode synchronisation from DASP to CDR60 (CD text interface)
SIN-	CONN1220 -> IC7225A	Hall feedback signal from sledge motor
SIN+	CONN1220 -> IC7225A	Hall feedback signal from sledge motor
SL-	IC7240 -> R3265 -> CONN1220	SLedge motor drive signal negative connection
SL+	IC7240 -> CONN1220	SLedge motor drive signal positive connection
SRSTN	IC7270 -> R3243B, IC7300	Slave ReSeT out (CDR60 reset), active low
STANDBY	IC7270 -> R3807 -> R3887 -> IC7701	STANDBY pin, high level activates essential powers necessary for full function; overrules HI_POWER setting
SUB	IC7701 -> R3710 -> IC7300	EIAJ subcode data from DASP to CDR60 (CD text interface)
SYS_CLK_11W	IC7701 -> R3732 -> IC7406	11.2896 MHz SYStem CLocK for AD/DA datapath
SYS_CLK_16W	IC7701 -> R3894D-> IC7706A	16.9344 MHz SYStem CLocK for producing SYS_CLK_BE
SYS_CLK_8W	IC7706A -> R3815 -> CONN1708	SYstem CLocK CD player (8.4672 MHz) (CDR779 only)
SYS_CLK_BE	IC7706A -> R3826 -> IC7270	SYstem CLocK Basic Engine (8.4672 MHz)
SYS_RESET	IC7701 -> R3758 -> CONNF934IC7701 -> R3770 -> T7707 -> CONN1708	SYStem RESET to display assy (and CD player for CDR779)
TCK	CONN1819 -> R3906, IC7701	JTAG ClocK signal
TDSO	IC7701 -> CONN1819	JTAG Serial Data Out / debug data out
TERMB	IC7270 <-> CONN1818	UART connection with MACE
TLN	IC7010 -> IC7270	Track Loss Normalized current output
TR-	IC7240 -> CONN1200	TRay motor drive signal negative connection
TR+	IC7240 -> CONN1200	TRay motor drive signal positive connection
TRACE99_RXD	CONN1818 -> R3838, IC7701	TRACE99 test tool receive data
TRACE99_TXD	IC7701 -> CONN1818	TRACE99 test tool transmit data
TRAYIN	IC7270 -> IC7240	move TRAY IN line, active low
TRAYOUT	IC7270 -> IC7240	move TRAY OUT line, active low
TRAYSW	CONN1200 -> R3747CONN1200 -> R3748	TRAY SWitch signal from loader assy
TRAYSWF	R3748, C2214 -> IC7270	Filtered TRAY SWitch signal, low is completely out or in

TXD_TOOL	IC7701 -> CONN1818	Transmit of UART for test TOOL
U+, U-, V+, V-, W+, W-	CONN1330 -> IC7330	hall feedback signals from turn table motor to hall motor driver
UCOIL, VCOIL, WCOIL	IC7330 -> CONN1330	drive signals for turn table motor
VCAGAIN	IC7016 -> IC7005A	set-point laser power on disc, voltage output
VDC1	CONN1500 -> CONNF934	supply voltage for display assy
VDC2	CONN1500 -> CONNF934	supply voltage for display assy
VFO	IC7270 -> R3295 -> R3244	FOcus actuator drive output
VFTD	CONN1500 -> CONNF934	Voltage Fluorescent Tube Display (display assy)
VRA	IC7270 -> R3297 -> R3254	RAdial actuator drive output
VSL	IC7270 -> R3299 -> IC7240	SLedge actuator drive output
WCLK	IC7701 -> R3898B -> IC7300	I2S1 WordCLocK from DASP to CDR60 (playback and record)
WOBBLE	IC7050C -> IC7300	analog WOBBLE signal of pre-groove detected by PPN-signal
WPON	IC7008 -> R3009IC7008 -> C2009	Write Power ON
WPONO	IC7008 -> R3106	Write Power ON Open drain output
WPONRC	R3003 -> CONN1000	Write Power ON (after RC circuit)
XDAC		multiplying DAC

10. Spare parts list

CDR779

Mechanical Parts

0001	3104 127 12900	FRONT COMPLETE ASSY CDR779
0003	3104 127 08710	KEY UNIT MIDDLE ASSY CDR779
0009	4822 410 11962	POWER BUTTON BLACK
0014	4822 459 10887	
0015	4822 454 13339	
0051	3104 124 05700	EASY JOG KNOB CDR779
0052	4822 492 51374	spring
0053	3104 124 05620	TRANSPARENT FRAME BUTTON
0054	3104 124 05620	TRANSPARENT FRAME BUTTON
0076	3104 144 05730	SUSPENSION
0077	3104 144 05730	SUSPENSION
0078	3104 144 05730	SUSPENSION
0079	3104 144 05730	SUSPENSION
0165	4822 442 01506	COVER
0251	4822 462 11174	LEG SILVER
0252	4822 462 11174	LEG SILVER
0253	4822 462 11174	LEG SILVER
0254	4822 462 11174	LEG SILVER
0301	4622 004 50290	Mains cord
0309	3104 125 23980	USER MANUAL CDR779
0312	4822 321 22611	CINCH GOLD L:1500
0313	4822 321 22611	CINCH GOLD L:1500
0317	3104 128 92730	GOLD PLATED CINCH CABLE 1M 75R
0318	3139 228 82010	RC282921/01
1003	3122 427 22000	PSU-CDR3-ECONOMY EURO 20PS202
1004	3104 128 06610	PB ASSY 4249 I/O CDR779
8005	3104 157 11230	CWAS FLEX 1MM 22 320 32S
8007	3104 157 11320	CWAS FLEX 1.25MM 7 300 32S
8010	3104 157 11480	CWAS FLEX 0,5MM 30 130

I/O board 4249

Miscellaneous

1101	4822 265 30987	BMT 7SR>CBL0,3-1,25
1201	4822 267 41064	YKC21
1205	4822 265 11287	4P
1207	4822 265 10482	YKC21
1208	4822 267 31626	YKC21
1401	4822 267 10666	30 P. FEM.

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2100	5322 122 32448	10pF 5% 63V CASE
2101	5322 122 32654	63V 22nF PM10 R
2102	5322 122 32448	10pF 5% 63V CASE
2103	5322 122 32654	63V 22nF PM10 R
2104	5322 124 11919	47µF 20% 6.3V
2106	5322 122 32654	63V 22nF PM10 R
2107	5322 124 11919	47µF 20% 6.3V
2108	4822 124 22339	100UE 16V
2109	4822 124 22339	100UE 16V
2111	5322 122 32654	63V 22nF PM10 R
2112	5322 124 11919	47µF 20% 6.3V
2113	4822 122 33177	10nF 20% 50V
2114	2022 029 00359	TAnF SM TAJ 10V 4U7 PM10 R
2115	2022 029 00359	TAnF SM TAJ 10V 4U7 PM10 R
2116	4822 122 33177	10nF 20% 50V
2118	5322 122 32654	63V 22nF PM10 R
2119	4822 126 14585	100nF 10% 50V
2120	5322 124 11919	47µF 20% 6.3V
2121	2022 029 00359	TAnF SM TAJ 10V 4U7 PM10 R
2122	5322 122 32654	63V 22nF PM10 R
2123	5322 124 11919	47µF 20% 6.3V
2124	5322 122 32654	63V 22nF PM10 R
2125	5322 122 32268	63V 470P PM5
2126	5322 122 32268	63V 470P PM5
2127	5322 122 32268	63V 470P PM5
2128	5322 122 32268	63V 470P PM5
2129	5322 122 32448	10pF 5% 63V CASE
2130	2022 029 00359	TAnF SM TAJ 10V 4U7 PM10 R
2131	2022 029 00359	TAnF SM TAJ 10V 4U7 PM10 R
2132	5322 122 32448	10pF 5% 63V CASE
2133	4822 126 14585	100nF 10% 50V
2134	4822 126 14585	100nF 10% 50V
2136	4822 124 22339	100UE 16V
2137	4822 124 22339	100UE 16V
2140	5322 122 32448	10pF 5% 63V CASE
2141	5322 122 32654	63V 22nF PM10 R
2143	5322 122 32448	10pF 5% 63V CASE
2144	5322 122 32654	63V 22nF PM10 R
2145	5322 122 32654	63V 22nF PM10 R
2146	5322 124 11919	47µF 20% 6.3V
2149	5322 122 32654	63V 22nF PM10 R
2151	5322 122 32654	63V 22nF PM10 R
2152	5322 124 11919	47µF 20% 6.3V
2153	5322 122 32654	63V 22nF PM10 R
2154	5322 124 11919	47µF 20% 6.3V
2155	2022 029 00359	TAnF SM TAJ 10V 4U7 PM10 R
2201	4822 126 14585	100nF 10% 50V
2202	5322 122 32654	63V 22nF PM10 R
2203	5322 122 32654	63V 22nF PM10 R
2204	4822 126 12105	50V 33nF PM5
2205	4822 126 12105	50V 33nF PM5
2206	4822 124 23002	10µF 16V
2207	5322 122 32654	63V 22nF PM10 R
2208	5322 122 33538	150pF 2% 63V
2209	5322 122 32654	63V 22nF PM10 R
2210	5322 122 32654	63V 22nF PM10 R
2215	5322 122 32659	33pF 5% 50V
2216	5322 122 32659	33pF 5% 50V
2217	5322 122 32659	33pF 5% 50V
2218	5322 122 32659	33pF 5% 50V
2219	5322 122 32659	33pF 5% 50V
2220	5322 122 32659	33pF 5% 50V
2221	4822 126 14585	100nF 10% 50V
2222	5322 122 32654	63V 22nF PM10 R
2223	5322 122 32654	63V 22nF PM10 R
2224	4822 124 23002	10µF 16V
2225	4822 126 12105	50V 33nF PM5
2226	4822 126 12105	50V 33nF PM5
2313	5322 122 32654	63V 22nF PM10 R
2316	5322 122 32654	63V 22nF PM10 R
2317	5322 122 32654	63V 22nF PM10 R
2318	5322 124 11919	47µF 20% 6.3V
2319	5322 122 32654	63V 22nF PM10 R
2320	5322 124 11919	47µF 20% 6.3V
2321	5322 122 31647	1nF 10% 63V
2322	5322 122 31647	1nF 10% 63V
2326	4822 126 14585	100nF 10% 50V
2327	4822 126 14585	100nF 10% 50V
2400	4822 126 14585	100nF 10% 50V
2401	3198 030 74780	EL SM 35V 4U7 PM20 COL R
2402	4822 126 14585	100nF 10% 50V
2403	5322 124 11919	47µF 20% 6.3V
2404	4822 126 14585	100nF 10% 50V
2405	5322 124 11919	47µF 20% 6.3V
2406	4822 126 14585	100nF 10% 50V
2407	3198 030 74780	EL SM 35V 4U7 PM20 COL R
2408	4822 126 14585	100nF 10% 50V
2409	5322 124 11919	47µF 20% 6.3V
2410	4822 126 14585	100nF 10% 50V
2411	5322 124 11919	47µF 20% 6.3V
2412	4822 126 14585	100nF 10% 50V
2413	5322 122 32531	100pF 5% 50V
2414	5322 122 32531	100pF 5% 50V
2415	5322 122 32531	100pF 5% 50V
2416	5322 122 32531	100pF 5% 50V
2417	5322 122 32531	100pF 5% 50V
2418	5322 122 32531	100pF 5% 50V
2419	5322 122 32531	100pF 5% 50V
2420	5322 122 32531	100pF 5% 50V
2421	5322 122 32531	100pF 5% 50V
2422	5322 122 32531	100pF 5% 50V
2423	5322 122 32531	100pF 5% 50V
2424	5322 122 32531	100pF 5% 50V
2425	5322 122 32531	100pF 5% 50V
2426	5322 122 32654	63V 22nF PM10 R
2427	4822 126 14585	100nF 10% 50V
2428	4822 126 14585	100nF 10% 50V
2504	4822 124 22339	100UE 16V
2514	4822 124 22339	100UE 16V
2600	5322 124 11919	47µF 20% 6.3V
2601	4822 126 14585	100nF 10% 50V
2602	4822 122 33575	220pF 5% 63V CASE
2603	5322 126 10511	1nF 5% 50V
2604	5322 126 10511	1nF 5% 50V
2605	5322 126 10511	1nF 5% 50V
2606	4822 122 33575	220pF 5% 63V CASE
2607	4822 126 14585	100nF 10% 50V
2608	4822 124 23002	10µF 16V
2609	4822 126 14585	100nF 10% 50V
2610	4822 124 23002	10µF 16V
2611	5322 124 11919	47µF 20% 6.3V
2612	4822 126 14585	100nF 10% 50V
2613	4822 122 33575	220pF 5% 63V CASE
2614	4822 126 14585	100nF 10% 50V
2615	5322 124 11919	47µF 20% 6.3V
2616	5322 126 10511	1nF 5% 50V
2617	5322 126 10511	1nF 5% 50V
2618	5322 126 10511	1nF 5% 50V
2619	4822 126 14585	100nF 10% 50V
2620	5322 124 11919	47µF 20% 6.3V
2621	4822 122 33575	220pF 5% 63V CASE
2622	4822 126 13693	56pF 1% 63V
2623	4822 126 13693	56pF 1% 63V
2624	4822 126 13693	56pF 1% 63V
2625	4822 126 13693	56pF 1% 63V
2626	2022 029 00359	TAnF SM TAJ 10V 4U7 PM10 R

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3100	4822 117 10833	10k 1% 0.1W
3101	2322 750 64709	RST SM FUSE 1206 47Ω PM5 R
3102	4822 117 13623	51k 1% 0.1W RC12H 0805
3104	2322 750 64709	RST SM FUSE 1206 47Ω PM5 R
3105	4822 051 20008	0Ω jumper . (0805)
3106	4822 051 20472	4k7 5% 0.1W
3108	4822 117 10354	22k 1% 0.1W
3109	4822 116 83933	15k 1% 0.1W
3110	4822 117 10833	10k 1% 0.1W
3111	2322 750 64709	RST SM FUSE 1206 47Ω PM5 R
3112	4822 117 11507	6k8 1% 0.1W
3113	4822 117 12519	47Ω 1% 0.1W
3114	4822 117 11145	4k7 1% 0.1W
3115	4822 117 11145	4k7 1% 0.1W
3116	4822 117 10833	10k 1% 0.1W
3117	4822 051 20332	3k3 5% 0.1W
3118	4822 117 11142	2k4 1% 0.1W
3119	4822 117 13623	51k 1% 0.1W RC12H 0805
3120	4822 117 12991	1k6 1% 0.1W 0805 RC12H
3122	2322 750 64709	RST SM FUSE 1206 47Ω PM5 R
3123	4822 117 11145	4k7 1% 0.1W
3124	4822 117 13623	51k 1% 0.1W RC12H 0805
3125	4822 117 10833	10k 1% 0.1W
3126	4822 117 11145	4k7 1% 0.1W
3127	2322 750 64709	RST SM FUSE 1206 47Ω PM5 R
3128	4822 117 11152	4Ω7 5%
3129	2322 750 64709	RST SM FUSE 1206 47Ω PM5 R
3130	2322 750 64709	RST SM FUSE 1206 47Ω PM5 R
3131	4822 117 10354	22k 1% 0.1W
3132	4822 117 10833	10k 1% 0.1W
3133	4822 116 83933	15k 1% 0.1W
3134	4822 117 13623	51k 1% 0.1W RC12H 0805
3135	4822 117 10833	10k 1% 0.1W
3136	4822 117 11507	6k8 1% 0.1W
3137	4822 117 13623	51k 1% 0.1W RC12H 0805
3138	4822 117 11145	4k7 1% 0.1W
3139	4822 051 20332	3k3 5% 0.1W
3140	4822 117 13623	51k 1% 0.1W RC12H 0805
3141	4822 117 11142	2k4 1% 0.1W
3142	4822 117 10833	10k 1% 0.1W
3143	4822 117 10833	10k 1% 0.1W
3144	4822 117 12991	1k6 1% 0.1W 0805 RC12H
3146	2322 750 64709	RST SM FUSE 1206 47Ω PM5 R
3147	4822 117 13623	51k 1% 0.1W RC12H 0805
3148	4822 117 13623	51k 1% 0.1W RC12H 0805
3149	4822 117 10833	10k 1% 0.1W
3150	4822 117 13623	51k 1% 0.1W RC12H 0805
3151	2322 750 64709	RST SM FUSE 1206 47Ω PM5 R
3152	2322 750 64709	RST SM FUSE 1206 47Ω PM5 R
3153	4822 117 13623	51k 1% 0.1W RC12H 0805

3154	4822 051 20471	470Ω 5% 0.1W
3155	4822 051 20471	470Ω 5% 0.1W
3156	2322 750 64709	RST SM FUSE 1206 47Ω PM5 R
3157	4822 117 10833	10k 1% 0.1W
3158	2322 750 64709	RST SM FUSE 1206 47Ω PM5 R
3202	4822 051 20332	3k3 5% 0.1W
3203	4822 117 12521	68Ω 1% 0.1W
3204	4822 051 20332	3k3 5% 0.1W
3206	4822 117 11927	75Ω 1% 0.1W
3207	4822 051 20332	3k3 5% 0.1W
3208	4822 117 11152	4Ω7 5%
3209	4822 051 20332	3k3 5% 0.1W
3214	4822 117 11373	100Ω 1% RC12H 0805
3215	4822 117 11373	100Ω 1% RC12H 0805
3216	4822 051 20122	1k2 5% 0.1W
3217	4822 051 20122	1k2 5% 0.1W
3219	4822 051 20008	0Ω jumper . (0805)
3220	4822 117 11373	100Ω 1% RC12H 0805
3221	4822 117 11373	100Ω 1% RC12H 0805
3223	4822 051 20122	1k2 5% 0.1W
3224	4822 051 20122	1k2 5% 0.1W
3225	4822 117 11373	100Ω 1% RC12H 0805
3226	4822 117 11373	100Ω 1% RC12H 0805
3227	4822 051 20122	1k2 5% 0.1W
3228	4822 051 20122	1k2 5% 0.1W
3229	4822 117 11373	100Ω 1% RC12H 0805
3230	4822 117 11373	100Ω 1% RC12H 0805
3231	4822 051 20122	1k2 5% 0.1W
3232	4822 051 20122	1k2 5% 0.1W
3233	4822 051 20332	3k3 5% 0.1W
3235	4822 117 12521	68Ω 1% 0.1W
3236	4822 051 20332	3k3 5% 0.1W
3237	4822 051 20008	0Ω jumper . (0805)
3313	2322 750 64709	RST SM FUSE 1206 47Ω PM5 R
3317	2322 750 64709	RST SM FUSE 1206 47Ω PM5 R
3320	2322 750 64709	RST SM FUSE 1206 47Ω PM5 R
3322	2322 750 64709	RST SM FUSE 1206 47Ω PM5 R
3323	4822 051 20008	0Ω jumper . (0805)
3324	4822 051 20008	0Ω jumper . (0805)
3400	4822 051 10008	0Ω 5% 0.25W
3401	4822 051 10008	0Ω 5% 0.25W
3403	4822 117 10833	10k 1% 0.1W
3405	4822 117 10833	10k 1% 0.1W
3406	4822 117 10833	10k 1% 0.1W
3407	4822 117 10833	10k 1% 0.1W
3408	4822 117 10833	10k 1% 0.1W
3411	4822 117 11152	4Ω7 5%
3412	4822 117 10833	10k 1% 0.1W
3413	4822 051 20479	47Ω 5% 0.1W
3414	4822 051 20479	47Ω 5% 0.1W
3415	4822 051 20479	47Ω 5% 0.1W
3416	4822 051 20479	47Ω 5% 0.1W
3417	4822 117 11152	4Ω7 5%
3418	4822 051 20479	47Ω 5% 0.1W
3419	4822 051 20479	47Ω 5% 0.1W
3508	4822 051 20008	0Ω jumper . (0805)
3512	4822 117 10833	10k 1% 0.1W
3521	4822 051 20008	0Ω jumper . (0805)
3530	4822 051 20008	0Ω jumper . (0805)
3534	4822 117 10833	10k 1% 0.1W
3543	4822 051 20008	0Ω jumper . (0805)
3549	4822 051 20008	0Ω jumper . (0805)
3550	4822 051 20008	0Ω jumper . (0805)
3601	4822 051 20008	0Ω jumper . (0805)
3602	4822 117 10837	100k 1% 0.1W
3603	4822 117 10833	10k 1% 0.1W
3604	4822 117 11142	2k4 1% 0.1W
3605	4822 117 11449	2k2 5% 0.1W 0805
3606	4822 117 11449	2k2 5% 0.1W 0805
3607	4822 117 11748	2Ω2 1206 5% FUSE
3608	4822 051 20471	470Ω 5% 0.1W
3609	4822 117 11449	2k2 5% 0.1W 0805
3610	4822 117 11449	2k2 5% 0.1W 0805
3611	4822 117 11142	2k4 1% 0.1W
3612	4822 117 11748	2Ω2 1206 5% FUSE
3613	4822 117 11142	2k4 1% 0.1W
3614	4822 117 11449	2k2 5% 0.1W 0805
3615	4822 117 11449	2k2 5% 0.1W 0805
3616	4822 051 20471	470Ω 5% 0.1W
3617	4822 117 11449	2k2 5% 0.1W 0805
3618	4822 117 11449	2k2 5% 0.1W 0805
3619	4822 117 11142	2k4 1% 0.1W
3620	4822 117 11748	2Ω2 1206 5% FUSE
3622	4822 051 20008	0Ω jumper . (0805)
3624	4822 051 20008	0Ω jumper . (0805)
3626	4822 051 20008	0Ω jumper . (0805)
3628	4822 051 20008	0Ω jumper . (0805)
4xxx	4822 051 10008	0Ω 5% 0.25W (1206)
4xxx	4822 051 20008	0Ω 5% 0.25W (0805)

5100	4822 157 71206	BLM21A601SPT
5101	4822 157 71206	BLM21A601SPT
5200	4822 157 70601	100µH (920927085A)
5201	4822 157 70601	100µH (920927085A)
5202	4822 157 71206	BLM21A601SPT
5203	4822 157 71206	BLM21A601SPT
5600	4822 157 71206	BLM21A601SPT

6100	9322 127 99685	UDZS5.1B
6200	4822 218 11487	GP1F32R

7100	9322 067 00668	IC SM OP275GS (ANA0) R
7101	4822 209 60792	74HC4053D
7102	9337 153 00118	IC SM 74HCT4051D (PHSE) R
7103	9322 067 00668	IC SM OP275GS (ANA0) R
7104	4822 209 90531	AD1877
7105	9322 067 00668	IC SM OP275GS (ANA0) R
7107	9337 153 00118	IC SM 74HCT4051D (PHSE) R
7201	5322 209 11517	PC74HCU04T
7203	4822 130 42615	BC817-40
7204	4822 130 42615	BC817-40
7205	4822 130 42615	BC817-40
7206	4822 130 42615	BC817-40
7207	4822 130 42615	BC817-40
7208	4822 130 42615	BC817-40
7209	4822 130 42615	BC817-40
7210	4822 130 42615	BC817-40
7211	5322 209 11517	PC74HCU04T
7301	4822 209 60792	74HC4053D
7302	9322 067 00668	IC SM OP275GS (ANA0) R
7403	4822 209 15375	74HC244D
7600	4822 209 17016	AD1855JRS
7601	9322 067 00668	IC SM OP275GS (ANA0) R

DISPLAYBOARD

Miscellaneous

0003	4822 256 10506	FTD HOLDER
1050	2422 129 16314	ROT.ENCODER + SWITCH
1101	4822 276 13114	EVQ21switch push button
1102	4822 276 13114	EVQ21
1103	4822 276 13114	EVQ21
1104	4822 276 13114	EVQ21
1105	4822 276 13114	EVQ21
1106	4822 276 13114	EVQ21
1107	4822 276 13114	EVQ21
1108	4822 276 13114	EVQ21
1109	4822 276 13114	EVQ21
1110	2422 540 98423	RES CER 8MHz CSTS*MHz 03
1111	4822 276 13114	EVQ21
1112	4822 276 13114	EVQ21
1113	2722 171 07174	VFD 15-BT-60GNK 106*40 (FTB0)B
1114	4822 276 13114	EVQ21
1115	4822 276 13114	EVQ21
1116	4822 276 13114	EVQ21
1117	4822 276 13114	EVQ21
1118	4822 276 13114	EVQ21
1120	4822 276 13114	EVQ21
1125	4822 276 13114	EVQ21
1126	4822 276 13114	EVQ21
1127	4822 276 13114	EVQ21
1128	4822 276 13114	EVQ21
1130	4822 276 13441	SKHQ
1131	4822 276 13441	SKHQ
1301	4822 276 14007	SWI PUSH 2P 0.1A 12V
1401	4822 267 31453	HLJ1540

2100	4822 126 14585	100nF 10% 50V
2101	4822 126 13838	100nF 50V 20%
2102	5322 122 32654	63V 22nF PM10 R
2104	5322 122 32658	22pF 5% 50V
2106	5322 122 32658	22pF 5% 50V
2111	4822 126 14585	100nF 10% 50V
2400	5322 122 31647	1nF 10% 63V
2401	5322 122 31647	1nF 10% 63V

3100	4822 051 20472	4k7 5% 0.1W
3101	4822 051 20472	4k7 5% 0.1W
3102	4822 051 20472	4k7 5% 0.1W
3103	4822 051 20472	4k7 5% 0.1W
3104	4822 051 20472	4k7 5% 0.1W
3105	4822 051 20472	4k7 5% 0.1W
3106	4822 117 11149	82k 1% 0.1W
3107	4822 051 20472	4k7 5% 0.1W
3108	4822 117 11373	100Ω 1% RC12H 0805
3109	4822 117 11503	220Ω 1% 0.1W
3111	4822 117 11373	100Ω 1% RC12H 0805
3112	4822 051 20393	39k 5% 0.1W
3113	4822 117 10833	10k 1% 0.1W
3114	4822 117 10833	10k 1% 0.1W
3115	4822 051 20561	560Ω 5% 0.1W
3116	4822 051 20561	560Ω 5% 0.1W
3122	4822 117 11149	82k 1% 0.1W
3124	4822 117 11149	82k 1% 0.1W
3125	4822 051 20332	3k3 5% 0.1W
3999	4822 117 12842	SM RST 0805
4xxx	4822 051 10008	0Ω 5% 0.25W (1206)
4xxx	4822 051 20008	0Ω 5% 0.25W (0805)

5100	4822 157 71206	BLM21A601SPT
5500	4822 157 70601	100µH (920927085A)

6100	9340 548 47115	PDZ3.3B
6200	4822 212 30842	TSOP1736SB1
6300	4822 130 82978	LTL-16KPE-P

7100	5322 130 60159	BC846B
7104	3104 123 94761	ROM TMP87CH74
7203	5322 130 60159	BC846B
7204	5322 130 60159	BC846B
7500	5322 130 60159	BC846B
7501	5322 130 60159	BC846B

CD Loader VAL1250

Miscellaneous

	3104 147 13300	LOADER VAL 1250 complete
0001	3104 147 14100	CHASSIS ASSY LOADER VAL 1250
0002	4822 361 11131	TRAY MOTOR ASSY
0003	4822 492 11709	MOTOR SPRING
0004	3139 198 80010	SWITCH
0006	4822 532 13097	TULE
0010	4822 528 11295	PULLEY WHEEL
0011	4822 358 10266	BELT
0012	4822 522 10739	RACK GEAR WHEEL
0013	4822 535 10588	PLUG
0014	4822 522 10741	TRAY GEAR WHEEL
0015	4822 535 10588	PLUG
0016	4822 402 11221	RACK
0017	4822 492 11711	RACK SPRING
0020	4822 466 12131	RUBBER
0021	4822 466 12131	RUBBER
0022	4822 466 12131	RUBBER
0023	4822 466 12131	RUBBER
0030	9305 022 25001	CDM VAM 1250
0035	3104 144 02030	SUSPENSION
0036	3104 144 02030	SUSPENSION
0037	3104 144 02030	SUSPENSION
0038	3104 144 02030	SUSPENSION
0040	3104 144 05870	SUB-CHASIS
0042	4822 492 11709	MOTOR SPRING
0043	4822 418 10421	TRAY HORIZONTAL
0045	3104 147 13910	CLAMPER ASSY VAL 1250
8001	3104 148 01310	LED ASSY 4P

Headphone board

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2100	4822 126 14585	100nF 10% 50V
2101	4822 124 81151	22µF 50V
2102	4822 126 14585	100nF 10% 50V
2103	4822 124 81151	22µF 50V
2104	5322 126 10511	1nF 5% 50V
2105	5322 126 10511	1nF 5% 50V

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3100	5322 117 11726	10Ω 5%
3101	5322 117 11726	10Ω 5%
3102	4822 051 20008	0Ω jumper . (0805)
3104	4822 051 20008	0Ω jumper . (0805)
3106	4822 117 11503	220Ω 1% 0.1W
3107	4822 117 11503	220Ω 1% 0.1W
3108	4822 051 20122	1k2 5% 0.1W
3109	4822 051 20122	1k2 5% 0.1W

7102	4822 209 82362	NJM4556D
7103	4822 130 42615	BC817-40
7104	4822 130 42615	BC817-40

PSU CDR3 ECO

Miscellaneous

0025	4822 492 63524	FIX. TRANSISTOR
0060	4822 492 63524	FIX. TRANSISTOR
0101▲	4822 265 31015	HSC0528
1120▲	4822 070 32002	218002.(2A)
1121	4822 265 11253	FUSE HOLDER 2P

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2102	2238 861 15182	50V 1N8 PM5 R
2104	5322 122 31647	1nF 10% 63V
2106	5322 126 10223	4.7nF 10% 63V
2109	5322 122 31863	63V 330pF PM5
2111	4822 126 14585	100nF 10% 50V
2120▲	4822 121 10697	220nF 20% 275V
2121	8222 675 05480	EL 47µF /400V YK KC RUBYCOnF
2127	4822 122 50116	470pF 10% 1KV
2128	4822 121 70141	33nF 5% 400V
2129	4822 124 40769	4.7µF 20% 100V
2131▲	4822 126 14497	2.2nF 20% 250V
2133	4822 124 42084	100µF 20% 35V
2134	4822 124 42084	100µF 20% 35V
2141	4822 124 22652	2.2µF 20% 50V
2142	4822 126 14585	100nF 10% 50V
2150	4822 126 14585	100nF 10% 50V
2161	4822 126 14585	100nF 10% 50V
2201	4822 126 14585	100nF 10% 50V
2202	5322 122 32654	63V 22nF PM10 R
2210	2020 012 93728	EL YK 10V S 2200µF PM20 B
2213	4822 124 41584	100µF 20% 10V
2220	4822 124 40849	330µF 20% 16V
2221	4822 126 13751	47nF 10% 63V
2222	4822 124 42234	100µF 20% 6.3V
2230	4822 124 81144	1000µF 16V
2234	4822 124 81151	22µF 50V
2240	4822 124 40196	220µF 20% 16V
2242	4822 124 41584	100µF 20% 10V
2250	4822 124 40255	100µF 20% 63V
2252	4822 124 40248	10µF 20% 63V
2253	2020 558 90449	DC DE-F 1KV 4N7 P8020 A
2260	4822 122 33177	10nF 20% 50V

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3102	4822 117 10354	22k 1% 0.1W
3103	4822 051 20339	33Ω 5% 0.1W
3104	4822 116 83933	15k 1% 0.1W
3105	4822 116 83933	15k 1% 0.1W
3106	4822 051 10102	1k 2% 0.25W
3109	4822 051 10102	1k 2% 0.25W
3110	4822 050 21003	10k 1% 0.6W
3111	4822 116 52199	68Ω 5% 0.5W
3112	4822 053 11229	22Ω 5% 2W
3113	4822 051 10102	1k 2% 0.25W
3117▲	4822 053 21684	680k 5% 0.5W
3119	2322 595 90023	VDR DC 1M A/423V S MAX 800V B
3123	4822 050 21803	18k 1% 0.6W
3124	4822 117 12181	470Ω 20% 0.5W
3125	4822 117 10833	10k 1% 0.1W
3126	4822 116 80176	1Ω 5% 0.5W
3127	4822 116 80176	1Ω 5% 0.5W
3128	4822 116 80676	1Ω5 5% 0.5W
3129	4822 117 10833	10k 1% 0.1W
3134	4822 050 21803	18k 1% 0.6W
3141	4822 117 10833	10k 1% 0.1W
3142	4822 051 20109	10Ω 5% 0.1W
3150	4822 117 11139	1k5 1% 0.1W
3151	4822 117 11148	56k 1% 0.1W
3201	4822 116 52176	10Ω 5% 0.5W
3202	4822 050 13302	3k3 1% 0.4W
3203	4822 116 52175	100Ω 5% 0.5W
3204	4822 117 10833	10k 1% 0.1W
3205	4822 117 11503	220Ω 1% 0.1W
3206	4822 051 20332	3k3 5% 0.1W
3207	4822 051 10102	1k 2% 0.25W
3208	4822 116 83883	470Ω 5% 0.5W
3221	4822 051 20122	1k2 5% 0.1W
3222	4822 051 20122	1k2 5% 0.1W
3223	4822 117 11596	390Ω 1% 0.1W
3224	4822 116 52199	68Ω 5% 0.5W
3225	4822 116 52199	68Ω 5% 0.5W
3229	4822 117 13085	5k6 1% RC12H 0.1W 0805
3230	4822 050 21002	1k 1% 0.6W
3232	4822 117 11383	12k 1% 0.1W
3233	4822 051 20471	470Ω 5% 0.1W
3234	4822 051 20332	3k3 5% 0.1W
3235	4822 116 52269	3k3 5% 0.5W
4xxx	4822 051 10008	0Ω 5% 0.25W (1206)
4xxx	4822 051 20008	0Ω 5% 0.25W (0805)

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5120	4822 157 11846	µH 1922P4
5125	4822 157 11411	100mH z
5130	4822 157 51312	68µH
5131▲	3128 138 38950	SM TRANSFORMER - CT283D3
5210	4822 157 11722	6.8µH 20% 7.7X9.5
5220	4822 157 51462	10µH 10% 4X9.8MM LAL04T100K
5225	4822 157 53139	4.7µH
5226	4822 157 53139	4.7µH
5230	4822 157 50963	2.2µH
5240	4822 157 51462	10µH 10% 4X9.8MM LAL04T100K
5250	4822 157 51462	10µH 10% 4X9.8MM LAL04T100K
5255	4822 157 51195	1 µH 20% 4X9.8MM AXIAL

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6100	4822 130 34281	BZX79-B15
6101	4822 130 34281	BZX79-B15
6102	4822 130 83707	SINB80
6106	4822 130 31603	1N4006
6107	4822 130 31603	1N4006
6129	5322 130 80122	BZX84-C24
6130	4822 130 83649	1SS355
6132	4822 130 42488	BYD33D
6133	4822 130 83649	1SS355
6141	4822 130 10656	UDZ20B
6150	4822 130 11148	UDZ4.7B
6201	9322 107 43685	UDZ22B
6202	9322 102 64685	DIO REG SM UDZ2.7B (RHM0) R
6210	4822 130 83865	SB360
6220	4822 130 42488	BYD33D
6230	4822 130 11415	BYV28-400/20
6240	4822 130 42606	BYD33J
6250	4822 130 32896	BYD33M

7110	9322 145 88682	UC3842A
7125	4822 130 11417	STP3NB60FP
7131▲	4822 130 91451	CQY80NG
7141	4822 130 60373	BC856B
7150	5322 130 60159	BC846B
7201	4822 209 81397	TL431CLPST
7249	4822 209 82112	MC7908CT
7251	4822 130 41344	BC337-40
7252	4822 130 60373	BC856B
7253	4822 130 41246	BC327-25
7254	5322 130 60159	BC846B
7260	8222 675 06290	VOLT.REG.BA12T ROHM

CD MAINBOARD

Miscellaneous

1000	2422 025 11704	CON BM H 16P F 1.00 FFC 0.3 R
1004	2422 543 00896	RES XTL SM 8M4672 30P CX-5F R
1006	4822 267 51454	CONN. 11P FEMALE
1205	5322 242 73686	CST12,00MTW-TF01
1206	4822 252 51173	19398E1(1,000A)
1207	4822 252 51173	19398E1(1,000A)
1208	4822 267 60409	CONN 22P FEMALE
1209	4822 265 30987	BMT 7SR>CBL0,3-1,25
1210	2422 025 11704	CON BM H 16P F 1.00 FFC 0.3 R

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2100	4822 126 14585	100nF 10% 50V
2102	4822 126 14585	100nF 10% 50V
2103	5322 122 31647	1nF 10% 63V
2104	4822 126 14585	100nF 10% 50V
2105	4822 124 81286	47µF 20% 16V
2106	4822 126 14585	100nF 10% 50V
2107	4822 124 81286	47µF 20% 16V
2109	5322 122 32654	63V 22nF PM10 R
2110	4822 126 14585	100nF 10% 50V
2111	4822 126 14585	100nF 10% 50V
2112	4822 126 14585	100nF 10% 50V
2113	4822 126 14585	100nF 10% 50V
2114	4822 126 14585	100nF 10% 50V
2115	4822 126 14585	100nF 10% 50V
2116	4822 124 41796	22µF 20% 16V
2117	4822 126 13561	220nF 10% 16V
2118	4822 126 14585	100nF 10% 50V
2119	4822 126 14585	100nF 10% 50V
2120	4822 124 41796	22µF 20% 16V
2121	4822 126 14585	100nF 10% 50V
2122	4822 126 12104	12nF 5% 50V
2123	5322 122 31863	63V 330pF PM5
2124	4822 126 14585	100nF 10% 50V
2125	4822 124 81286	47µF 20% 16V
2126	5322 122 34098	10nF 10% 63V
2127	5322 122 31863	63V 330pF PM5
2128	4822 124 80483	47µF 20% 6.3V
2130	4822 126 14305	100nF 10% 16V 0603
2131	4822 126 14585	100nF 10% 50V
2132	4822 124 80483	47µF 20% 6.3V
2133	4822 126 13482	470nF 80/20% 16V
2134	4822 126 14305	100nF 10% 16V 0603
2135	4822 124 41796	22µF 20% 16V
2137	4822 126 14494	22nF 10% 25V 0603
2138	4822 126 14494	22nF 10% 25V 0603
2139	4822 126 14305	100nF 10% 16V 0603
2140	4822 126 14508	180pF 5% 50V 0603
2141	4822 126 14238	0603 50V 2N2 COL R
2142	5322 122 32654	63V 22nF PM10 R
2143	4822 126 14241	0603 50V 330P COL R
2145	4822 126 13692	47pF 1% 63V
2146	4822 126 14247	0603 50V 1N5 COL R
2147	4822 126 13482	470nF 80/20% 16V
2148	4822 124 22726	4.7µF 35V
2149	3198 016 36810	0603 25V 680P COL R
2150	4822 126 12105	50V 33nF PM5
2151	5322 124 11919	47µF 20% 6.3V
2152	4822 126 14305	100nF 10% 16V 0603
2153	4822 122 33777	47pF 5% 63V
2154	4822 124 81286	47µF 20% 16V
2155	4822 126 14585	100nF 10% 50V
2156	5322 124 11919	47µF 20% 6.3V
2157	4822 126 14305	100nF 10% 16V 0603
2158	4822 122 33777	47pF 5% 63V
2159	3198 017 34730	0603 16V 47nF COL
2160	4822 126 14494	22nF 10% 25V 0603
2161	5322 124 11919	47µF 20% 6.3V
2162	4822 122 31765	100pF 2% 63V
2163	4822 126 14549	33nF 16V O6O3
2164	4822 126 14508	180pF 5% 50V 0603
2165	4822 122 33777	47pF 5% 63V
2166	3198 017 34730	0603 16V 47nF COL
2167	4822 126 14585	100nF 10% 50V
2168	4822 126 13883	220pF 5% 50V
2169	5322 126 10794	220pF 5% 63V
2170	5322 126 10794	220pF 5% 63V
2171	5322 126 10794	220pF 5% 63V
2172	5322 126 10794	220pF 5% 63V
2173	5322 126 10794	220pF 5% 63V
2174	4822 126 14494	22nF 10% 25V 0603
2175	4822 124 81286	47µF 20% 16V
2176	4822 122 33777	47pF 5% 63V

2178	4822 126 14585	100nF 10% 50V
2180	4822 124 41796	22µF 20% 16V
2181	4822 124 41796	22µF 20% 16V
2184	4822 126 14225	56pF 5% 50V 0603
2185	4822 126 14225	56pF 5% 50V 0603
2186	4822 124 81286	47µF 20% 16V
2187	4822 126 14585	100nF 10% 50V
2188	4822 126 14305	100nF 10% 16V 0603
2189	4822 126 14585	100nF 10% 50V
2191	4822 124 81286	47µF 20% 16V
2197	4822 124 81286	47µF 20% 16V
2199	4822 126 13692	47pF 1% 63V
2200	4822 126 14249	560pF 10% 50V CASE0603
2201	4822 126 14247	0603 50V 1N5 COL R
2202	5322 122 32658	22pF 5% 50V
2203	4822 124 22726	4.7µF 35V
2204	4822 126 14585	100nF 10% 50V
2208	4822 124 81286	47µF 20% 16V
2211	4822 126 13692	47pF 1% 63V
2214	5322 122 32658	22pF 5% 50V
2216	4822 126 14305	100nF 10% 16V 0603
2217	4822 122 33777	47pF 5% 63V
2220	4822 126 14585	100nF 10% 50V
2230	5322 126 10223	4.7nF 10% 63V
2232	4822 126 14305	100nF 10% 16V 0603
2233	5322 122 31865	63V 1N5 PM10 R
2234	4822 124 12362	47µF 4V 20%
2235	4822 124 12362	47µF 4V 20%
2252	5322 122 31647	1nF 10% 63V
2280	4822 126 14585	100nF 10% 50V
2285	5322 122 31865	63V 1N5 PM10 R
2286	5322 122 31865	63V 1N5 PM10 R
2300	4822 126 14305	100nF 10% 16V 0603
2301	4822 124 81286	47µF 20% 16V
2302	4822 124 11947	10µF 20% 16V
2303	4822 126 14305	100nF 10% 16V 0603
2304	4822 124 40196	220µF 20% 16V
2306	2222 780 15656	16V 330nF PM10 R
2307	4822 124 40207	100µF 20% 25V
2320	4822 122 33777	47pF 5% 63V
2321	4822 122 33777	47pF 5% 63V
2322	4822 122 33777	47pF 5% 63V
2325	4822 126 14305	100nF 10% 16V 0603
2326	4822 126 14305	100nF 10% 16V 0603
2327	4822 126 14305	100nF 10% 16V 0603

3100	4822 051 20223	22k 5% 0.1W
3101	4822 051 20223	22k 5% 0.1W
3102	4822 051 20479	47Ω 5% 0.1W
3103	4822 117 10834	47k 1% 0.1W
3104	4822 051 30008	0Ω jumper
3105	4822 051 30008	0Ω jumper
3106	4822 051 30008	0Ω jumper
3107	4822 051 30008	0Ω jumper
3113	4822 051 10102	1k 2% 0.25W
3114	4822 051 20822	8k2 5% 0.1W
3115	4822 051 20472	4k7 5% 0.1W
3116	4822 117 10834	47k 1% 0.1W
3117	4822 051 20479	47Ω 5% 0.1W
3130	4822 117 10833	10k 1% 0.1W
3131	4822 117 11151	1Ω 5%
3132	4822 051 20223	22k 5% 0.1W
3134	4822 051 20108	1Ω 5% 0.1W
3135	4822 051 20108	1Ω 5% 0.1W
3136	4822 051 20122	1k2 5% 0.1W
3137	4822 117 11504	270Ω 1% 0.1W
3138	4822 117 11504	270Ω 1% 0.1W
3139	4822 117 10833	10k 1% 0.1W
3140	4822 051 20008	0Ω jumper . (0805)
3141	4822 051 20008	0Ω jumper . (0805)
3142	4822 117 11504	270Ω 1% 0.1W
3143	4822 117 10834	47k 1% 0.1W
3144	4822 117 10834	47k 1% 0.1W
3145	4822 117 11504	270Ω 1% 0.1W
3146	4822 117 10837	100k 1% 0.1W
3148	4822 051 20008	0Ω jumper . (0805)
3149	4822 051 10102	1k 2% 0.25W
3150	4822 117 11383	12k 1% 0.1W
3151	4822 117 11383	12k 1% 0.1W
3152	4822 051 20008	0Ω jumper . (0805)
3153	4822 051 30101	100Ω 5% 0.062W
3154	4822 117 11151	1Ω 5%
3155	4822 051 20008	0Ω jumper . (0805)
3156	4822 117 11383	12k 1% 0.1W
3157	4822 117 11383	12k 1% 0.1W
3158	4822 051 20122	1k2 5% 0.1W
3159	4822 051 20008	0Ω jumper . (0805)
3160	4822 117 10833	10k 1% 0.1W
3161	4822 117 11748	2Ω2 1206 5% FUSE
3162	4822 117 11748	2Ω2 1206 5% FUSE
3164	4822 051 20479	47Ω 5% 0.1W
3168	4822 117 11373	100Ω 1% RC12H 0805
3169	4822 051 30272	2k7 5% 0.062W
3171	4822 051 30103	10k 5% 0.062W
3172	4822 117 11373	100Ω 1% RC12H 0805
3173	4822 117 11452	430Ω 1% 0.1W
3174	4822 117 11452	430Ω 1% 0.1W
3176	4822 117 11373	100Ω 1% RC12H 0805
3177	4822 117 11151	1Ω 5%
3178	4822 051 30102	1k 5% 0.062W
3179	4822 051 30102	1k 5% 0.062W
3180	4822 051 30272	2k7 5% 0.062W
3181	4822 051 20223	22k 5% 0.1W
3182	4822 051 30391	390Ω 5% 0.062W
3183	4822 051 30103	10k 5% 0.062W
3184	4822 117 11748	2Ω2 1206 5% FUSE
3185	4822 051 30472	4k7 5% 0.062W
3186	4822 051 30472	4k7 5% 0.062W
3187	4822 051 30391	390Ω 5% 0.062W
3188	4822 051 30272	2k7 5% 0.062W
3189	4822 051 30391	390Ω 5% 0.062W
3190	4822 117 11456	30k 1% 0.1W
3191	4822 117 11452	430Ω 1% 0.1W
3192	4822 117 11452	430Ω 1% 0.1W
3193	4822 051 30181	180Ω 5% 0.062W
3194	4822 051 20008	0Ω jumper . (0805)
3195	4822 051 20008	0Ω jumper . (0805)
3196	4822 051 30102	1k 5% 0.062W
3197	4822 117 10833	10k 1% 0.1W
3198	4822 051 30479	47Ω 5% 0.062W
3199	4822 051 30152	1k5 5% 0.062W
3200	4822 117 10833	10k 1% 0.1W
3201	4822 117 11817	1k2 1% 1/16W
3202	4822 051 30223	22k 5% 0.062W
3203	4822 051 30272	2k7 5% 0.062W
3204	4822 051 20008	0Ω jumper . (0805)
3205	4822 051 30103	10k 5% 0.062W
3206	4822 051 30008	0Ω jumper
3208	4822 117 13608	4.7Ω 5% 0603 0.0016W
3212	4822 051 30105	1M 5% 0.062W
3214	4822 051 20008	0Ω jumper . (0805)
3215	4822 117 11748	2Ω2 1206 5% FUSE
3216	4822 117 11748	2Ω2 1206 5% FUSE
3217	4822 117 10833	10k 1% 0.1W
3218	4822 051 10102	1k 2% 0.25W
3219	4822 117 13573	NETW 4 X 47Ω 5% MNR14
3220	4822 051 30103	10k 5% 0.062W
3225	4822 117 11748	2Ω2 1206 5% FUSE
3226	4822 117 10833	10k 1% 0.1W
3229	4822 117 11748	2Ω2 1206 5% FUSE
3233	4822 117 10354	22k 1% 0.1W
3235	4822 051 30008	0Ω jumper
3236	4822 051 20008	0Ω jumper . (0805)
3237	4822 051 20008	0Ω jumper . (0805)
3241	4822 117 10354	22k 1% 0.1W
3242	4822 117 10833	10k 1% 0.1W
3243	4822 117 10834	47k 1% 0.1W
3245	4822 117 10834	47k 1% 0.1W
3248	4822 117 10354	22k 1% 0.1W
3254	4822 117 10354	22k 1% 0.1W
3256	4822 117 10833	10k 1% 0.1W
3258	4822 117 10834	47k 1% 0.1W
3260	4822 117 10834	47k 1% 0.1W
3263	4822 117 11748	2Ω2 1206 5% FUSE
3265	4822 117 10837	100k 1% 0.1W
3266	4822 051 10102	1k 2% 0.25W
3267	4822 051 30102	1k 5% 0.062W
3268	4822 117 10837	100k 1% 0.1W
3269	4822 117 11373	100Ω 1% RC12H 0805
3270	4822 117 10833	10k 1% 0.1W
3271	4822 117 11373	100Ω 1% RC12H 0805
3273	4822 117 11373	100Ω 1% RC12H 0805
3274	4822 117 11373	100Ω 1% RC12H 0805
3275	4822 117 11373	100Ω 1% RC12H 0805
3276	4822 117 11373	100Ω 1% RC12H 0805
3277	4822 117 11373	100Ω 1% RC12H 0805
3278	4822 051 20008	0Ω jumper . (0805)
3279	4822 117 11151	1Ω 5%
3280	4822 117 10833	10k 1% 0.1W
3282	4822 051 30103	10k 5% 0.062W
3283	4822 117 10833	10k 1% 0.1W
3284	4822 051 30008	0Ω jumper
3285	4822 051 30472	4k7 5% 0.062W
3286	4822 051 30154	150k 5% 0.062W
3287	4822 117 12925	47k 1% 0.063W 0603
3300	4822 051 30103	10k 5% 0.062W
3302	4822 051 30103	10k 5% 0.062W
3303	4822 051 30103	10k 5% 0.062W
3304	4822 051 30103	10k 5% 0.062W
3305	4822 051 30103	10k 5% 0.062W
3306	4822 051 30103	10k 5% 0.062W
3307	4822 051 30103	10k 5% 0.062W
3308	4822 117 11748	2Ω2 1206 5% FUSE
3310	4822 051 10102	1k 2% 0.25W
3312	4822 051 10102	1k 2% 0.25W
3313	4822 117 10833	10k 1% 0.1W
3314	4822 117 10833	10k 1% 0.1W
3318	4822 117 11373	100Ω 1% RC12H 0805
3319	4822 117 11373	100Ω 1% RC12H 0805
3320	4822 117 11373	100Ω 1% RC12H 0805
3328	4822 051 20105	1M 5% 0.1W
3331	4822 117 11373	100Ω 1% RC12H 0805
3333	4822 051 30101	100Ω 5% 0.062W
3335	4822 051 30103	10k 5% 0.062W
3337	4822 051 30103	10k 5% 0.062W
3339	4822 051 30103	10k 5% 0.062W
3342	4822 117 10833	10k 1% 0.1W
3350	4822 051 10102	1k 2% 0.25W
3352	4822 051 20008	0Ω jumper . (0805)
3353	4822 117 11373	100Ω 1% RC12H 0805
3354	4822 117 11373	100Ω 1% RC12H 0805
3355	4822 117 11373	100Ω 1% RC12H 0805
3356	4822 117 11373	100Ω 1% RC12H 0805
3357	4822 051 20008	0Ω jumper . (0805)
3359	4822 051 20008	0Ω jumper . (0805)
3360	4822 051 20008	0Ω jumper . (0805)
3361	4822 117 11373	100Ω 1% RC12H 0805
3999	4822 117 12842	SM RST 0805 PROCESS CHIP

6000	4822 130 11382	BYG50D
6001	4822 130 11382	BYG50D
6002	4822 130 11382	BYG50D
6003	4822 130 83757	BAS216

7000	9352 641 80557	SAA7324H/M2B
7005	9337 143 50653	74HCT08
7006	5322 130 42718	BFS20
7007	4822 130 60373	BC856B
7008	5322 130 42718	BFS20
7009	5322 130 42718	BFS20
7010	5322 130 60159	BC846B
7011	5322 130 42718	BFS20
7019	4822 130 60373	BC856B
7020	4822 209 16877	BA6856FP
7021	4822 209 32852	TDA7073A/N2
7022	4822 209 32852	TDA7073A/N2
7023	5322 130 42718	BFS20
7025	9337 153 10118	IC SM 74HCT4052D (PHSE) R
7120	4822 209 30095	LM833D
7130	5322 130 60159	BC846B
7131	4822 130 60373	BC856B
7132	5322 130 60159	BC846B
7203	5322 130 60159	BC846B
7204	4822 209 17398	LD1117DT33
7301	5322 130 60159	BC846B
7309	4822 209 17237	UDA1320ATS
7310	5322 130 60159	BC846B